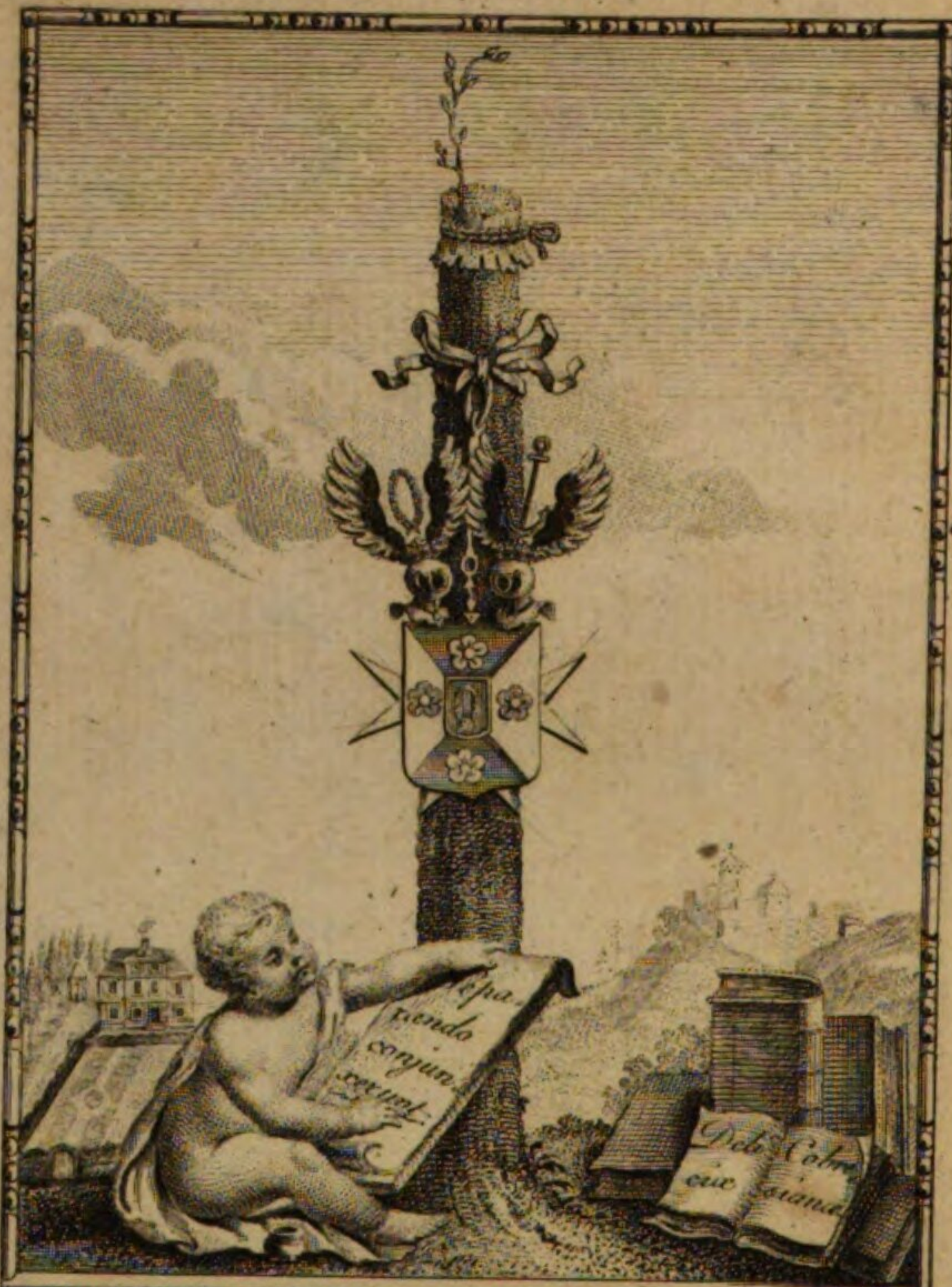




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FLORA SCOTICA

BY

THE REV^d JOHN LIGHTFOOT.



VOL. II.

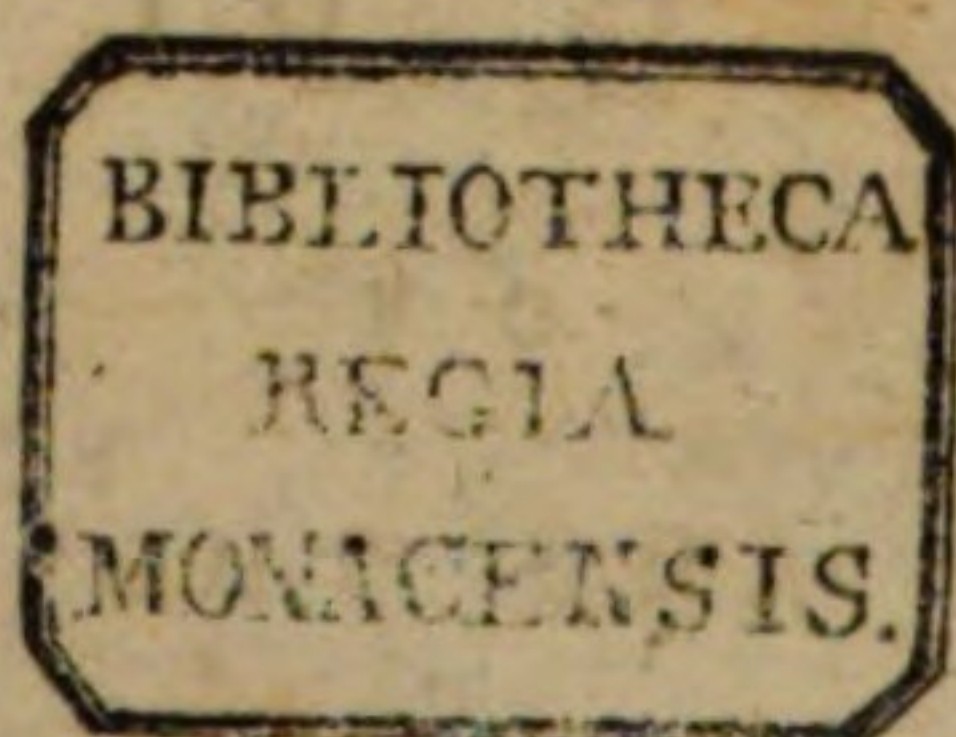


Agrostis pumila
Appendix. P. 1081.

L O N D O N .

MDCCLXXVII .

P. Marshall del. et sculp.



BIBLIOTHECA

REGIA

MONACENSIS.

FLORA SCOTICA:

OR, A

SYSTEMATIC ARRANGEMENT,

IN THE

LINNÆAN METHOD,

OF THE

NATIVE PLANTS

OF

SCOTLAND AND THE HEBRIDES.

By JOHN LIGHTFOOT, A. M.

Rector of *Gotbam* in *Nottinghamshire*, and Chaplain to the *Duchess*
Dowager of *PORTLAND*.

VOL. II.

Where does the Wisdom and the Power divine,
In a more bright and sweet reflection shine?
Where do we finer strokes and colours see
Of the Creator's real poetry,
Than when we with attention look
Upon the third day's volume of the book?
If we could open and intend our eye,
We all like *Moses* should espy,
Ev'n in a bush the radiant Deity.

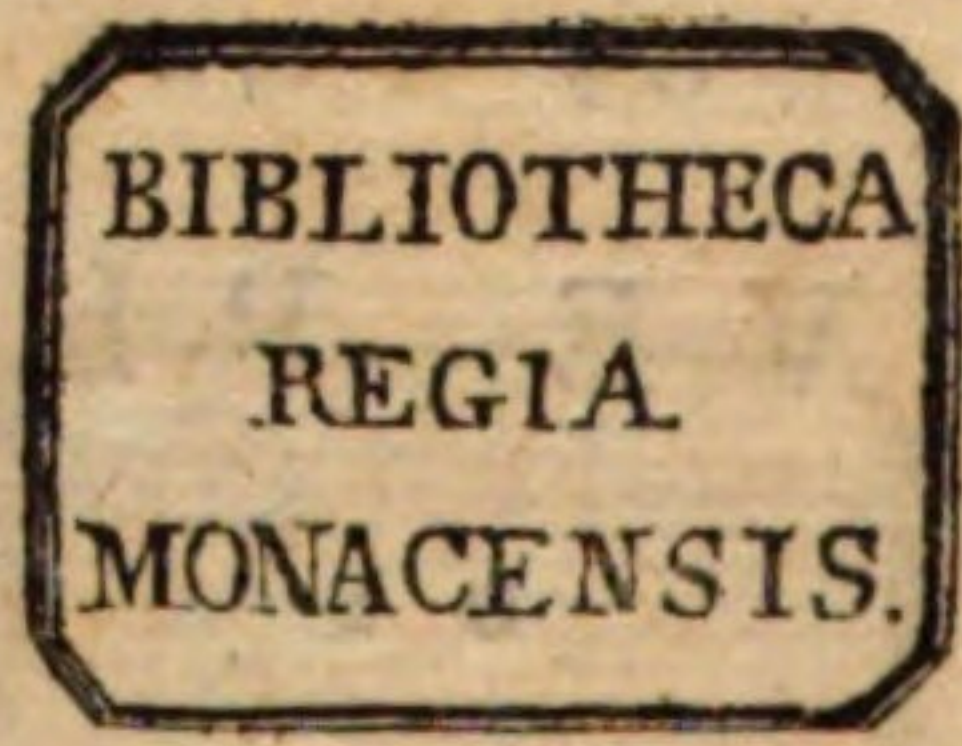
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L O N D O N:

PRINTED FOR B. WHITE,
AT HORACE'S HEAD, IN FLEET-STREET.
M.DCC.LXXVII.

FLORA SCOTICA

OF A
SYSTEMATIC ARRANGEMENT
IN THE
LINNEAN METHOD



SCOTLAND AND THE HEBRIDES

BY JOHN EIGHTHROT, A.M.
Fellow of the Royal Society, and Captain of the Duke of Devonshire's Regiment of Foot Guards

LONDON: Printed by J. JOHNSON, in Pall-mall.

When first the British Isles we view,
In what great variety we find
Of plants, and what a number of
Of the Crown, and what a number
That stand on our mountainside,
From the high tops of the hills,
It is a sight that never fades
We find the same things here,
It is a sight that never fades

ALBANY: Printed by J. JOHNSON, in Pall-mall.
1791

C L A S S I S XXI.

M O N O E C I A.

M O N A N D R I A.

CHARA. ♂. *s. Flos. masc. Cal. nullus. Cor. nulla.*

♀. *s. Flos. fem. Cal. 4-phyllus. Cor. nulla.*

Stigma 5-fidum. Sem. 1.

ZANNICHELLIA. ♂. *Cal. nullus. Cor. nulla.*

♀. *Cal. 1-phyllus. Cor. nulla.*

Pist. 4. Sem. 4.

* *Callitriche verna.*

D I A N D R I A.

LEMNA. ♂. *Cal. 1-phyllus. Cor. nulla.*

♀. *Cal. 1-phyllus. Cor. nulla.*

Styl. 1. Caps. 1-locularis.

T R I A N D R I A.

CAREX. ♂. *Amentum 1-florum. Cor. nulla.*

♀. *Ament. 1-florum. Cor. nulla.*

Styl. 1. Sem. 1, tunicatum.

SPARGANIUM. ♂. *Cal. 3-phyllus. Cor. nulla.*

♀. *Cal. 3-phyllus. Cor. nulla.*

Stig. 2. Sem. 1-sperma.

TYPHA. ♂. *Cal. 3-phyllus. Cor. nulla.*

M m 2

Cal.

M O N O E C I A.

♀. *Cal.* capillaris. *Cor.* nulla.
Styl. 1. *Sem.* 1, pappigerum.

T E T R A N D R I A.

ERIOCAULON. ♂. *Cal.* 2-phyllus. *Cor.* 2-petala.

♀. *Cal.* 2-phyllus. *Cor.* 1-petala.
Styl. 2-partitus. *Caps.* 2-
 cocca.

LITTORELLA. ♂ *Cal.* 4-phyllus. *Cor.* 4. par-
 tita.

♀. *Cal.* nullus. *Cor.* obsoleta
Styl. longissimus. *Sem.* *Nux.*
 1-ocularis.

URTICA. ♂. *Cal.* 4-phyllus. *Cor.* nulla.

Nectar. cyathiforme.

♀. *Cal.* 2-valvis. *Cor.* 0. *Stigm.* villo-
 sum.

Sem. 1, ovatum.

BETULA. ♂. *Amentum* 3-florum. *Cor.* 4-partita.

♀. *Ament.* 2-florum. *Cor.* nulla.

Styl. 2. *Sem.* 1, ovatum.

POLYANDRIA. (plura quam 7)

MYRIOPHYLLUM. ♂. *Cal.* 4-phyllus. *Cor.*
 nulla. *Stam.* 8.

♀. *Cal.* 4-phyllus. *Cor.*
 nulla. *Pist.* 4. *Sem.* 4.

CERATOPHYLLUM. ♂. *Cal.* sub 7-partitus.
Cor. nulla. *Stam.* 18,
 circiter.

Ca.

♀. *Cal.* sub 7-partitus.
Cor. nulla. *pist.* 1.
Sem. 1.

FAGUS. ♂. *Cal.* 5-fidus. *Cor.* nulla. *Stam.* 12,
 circiter.

♀. *Cal.* 4-fidus. *Cor.* nulla. *Styl.* 3. *Caps.*
 2-sperma.

QUERCUS. ♂. *Cal.* 5-fidus. *Cor.* nulla. *Stam.*
 10 circiter.

♀. *Cal.* integer. *Cor.* nulla. *Styl.* 5.
Nux coriacea,

CORYLUS. ♂. *Amentum* imbricatum. *Cor.* nul-
 la. *Stam.* 8.

♀. *Cal.* 2-phyllus. *Cor.* nulla. *Styl.*
 2. *Nux* nuda.

CARPINUS. ♂. *Ament.* imbricatum. *Cor.* nulla.
Stam. 10.

♀. *Cal.* 6-fidus. *Cor.* nulla. *Pist.* 2.
Nux nuda.

M O N A D E L P H I A.

PINUS. ♂. *Cal.* 4-phyllus. *Cor.* nulla. *Stam.*
 plurima.

♀. *Ament.* strobilaceum. *Cor.* nulla.
Pist. 2. *Nuces* 2, alatae.

S Y N G E N E S I A.

BRYONIA. ♂. *Cal.* 5-dentatus. *Cor.* 5-partita.
Filam. 3.

♀. *Cal.* 5-dentatus. *Cor.* 5-partita.
Styl. 3-fid. *Bacca.*

CLASSIS

C L A S S I S XXI.

M O N A N D R I A.

ZANNICHELLIA. *Gen. pl.* 1034.MASCULI. *Cal.* o. *Cor.* o.FEMINEI. *Cal.* 1-phyllus. *Cor.* o. *Germina* circiter 4. *Sem.* totidem.

palustris 1. ZANNICHELLIA. *Sp. pl.* 1375. (*Pet. herb. t.* 6. *f.* 2. *Pluk. alm. t.* 102. *f.* 7. *Mich. gen. t.* 34. *f.* 1, 2, *bona.* *Oed. Dan. t.* 67.)

Horned Pondweed. *Anglis.*

In ditches and stagnant waters. ☉. VIII.

The stalk is greatly branched, weak, jointed, and floats in the water: the leaves are setaceous, or very narrow and grass-like, and grow out of the joints, subtended by a broad sheathing *stipula*: the *germina* are a little rough, gibbous, and grow four or six in a whirl at the joints: the *anthera* is supported by a long filament, and grows by itself a little below the *germina*:

CHARA. *Mantifs. pl. gen. p.* 23.*Gen. pl.* 1203.MASC. *Cal.* o. *Cor.* o. *Anthera* germini subjecta.FEM. *Cal.* 4-phyllus. *Cor.* nulla. *Stigma* 5-fidum.*Sem.* 1.

CHARA

vulgaris 1. CHARA caulibus lævibus, frondibus internè dentatis. *Syst. nat.* 613. *Spec. pl.* 1624. (*Baub. Prodr. ic.* p. 25. *Vaill. Aët. Paris.* 1719. p. 23. t. 3. f. 1)

Common Chara, or stinking Water Horsetail. *Anglis.*

In ditches where the water runs slowly not uncommon. Dr. Parsons.

The stalks are branched; when young smooth, straited, and flexible; but when grown to maturity, more rigid, and incrusted with a kind of tophaceous coat, which is like sand between the teeth. When dry'd they are extremely brittle. The leaves are setaceous, and grow verticillate, eight or nine in a whirl. The *pericarpium* is a yellow or scarlet crust or berry: they grow about two from the *alæ* of each whirl, of an oblong form, replete with many black seeds. The whole plant has a strong disagreeable smell like garlick or hemlock.

bispida 2. CHARA caulibus aculeatis capillaribus confertis. *Syst. nat.* 613. *Sp. pl.* 1624. (*Vaill. aët. Paris.* 1719. p. 18. t. 3. f. 3. *Pluk. alm.* t. 193. f. 6. *Oed. Dan.* t. 154)

Prickly Chara. *Anglis.*

In ditches and lakes, as in *Guillon-Loch*, in *East-Lothian*, near Lord *Hyndford's*. Dr. Parsons.

The stalk of this is a foot long, often spirally streak'd, and together with the leaves covered with numerous *spinulæ*, which are never seen in
the

MONOECIA MONANDRIA.

the preceding. It is incrusted, and smells and tastes like the *C. vulgaris*.

flexilis 3.

CHARA caulium articulis inermibus diaphanis superne latioribus. *Syst. nat.* 613. *Sp. pl.* 1624. (*Vail. act. Paris.* 1719, p. 18, f. 8, 9. *Dillen.* 1. c. p. 59, t. 13, f. 2, *Schmiedel* t. 14)

Pellucid pliant Chara. *Anglis.*

In lakes, as in *Loch-Lomond*, by Dr. *Parsons*. In *Hill-Loch*, upon *Creg-chailleck*, in *Breadalbane*, and at *Comrie*, a village four miles from *Crief*. Mr. *Stuart*.

The stalks are eight or ten inches long, fistular, tender, smooth, flexible, and of a dull green pellucid colour: the leaves are smooth, linear, fistular, pointed at the end, from four to ten or twelve in a whirl, often subdivided into two and sometimes into three forks or branches, at a joint near their extremity: the whirls grow in clusters towards the upper part of the stalks, secondary ones being produced from the *alæ* of the primary: the fructifications grow either single or in pairs, sessile, and placed on the inside, at the angle of the fork or branches abovementioned: these fructifications appear at first like small round yellowish grains, which afterwards turn black, and are enclosed within a green transparent rind or pericarpium.

DIANDRIA.

D I A N D R I A.

LEMNA. *Gen. pl.* 1038.

MASC. *Cal.* monophyllus. *Cor.* nulla.

FEM. *Cal.* monophyllus. *Cor.* nulla. *Styl.* 1.
Caps. unilocularis.

trifolca 1. LEMNA foliis petiolatis lanceolatis. *Sp. pl.* 1376.
(*Ger. em.* 830, *f.* 2, *Michel. gen. t.* 11, *f.* 5.
Roes. hist. Polyp. t. 72, *frontispicali ad imum.*)

Ivy-leav'd Duck's-Meat. *Anglis.*

In clear stagnant waters, as in *Didiston-Loch*. Dr.
Parsons. 4. VI.

The stalk is dichotomous, filiforme, and divaricated, having a lanceolate leaf at the angle of the branches, but proliferous ones, terminating the branches; i. e. similar leaves growing out of their sides at right angles: where these three leaves are conjoin'd there shoots out a pendent radicle, with a conical papilla at its base.

minor. 3. LEMNA foliis sessilibus utrinque planiusculis, radicibus solitariis. *Sp. pl.* 1376. (*Ger. em.* 829.
Raii Synops. 129. *t.* 4, *f.* 1. *Michel. gen. t.* 11, *f.* 3, *Blackwel. t.* 380. *Roes. hist. Polyp. t.* 72 & 74, *f.* 12.)

The least Duck's Meat. *Anglis.*

In stagnant Waters common. O. VII.

It produces its flowers in the Dog-days, which, together with the seeds, afford a nourishment to that wonderful animalcule called the *Hydra Polypus*.

MONOECIA DIANDRIA.

lypus. Lin. Ducks are well known to be fond of this plant, and the *Phalæna Lemnata* of *Linnaeus*, breeds upon it.

polyrhiza 3 LEMNA foliis sessilibus, radicibus confertis. *Sp. pl.* 1377. (*Raj. Syn. p.* 129. *t.* 4. *f.* 2. *Michel. gen. t.* 11. *f.* 1)

Great Duck's Meat. *Anglis.*

In stagnant waters. ☉. VII.

The leaves of this are often red underneath : it sinks to the bottom of the water in the Winter season, and rises to the surface again in the Spring, as does also the preceding. It is readily distinguished by having a cluster or pencil of radicles under each leaf, whereas the preceding has only one single radicle.

TYPHA. *Gen. pl.* 1040.

MASC. Amentum cylindricum. *Cal.* obsoletus, triphyllus. *Cor.* nulla.

FEM. Amentum cylindricum infra masculos.

Cal. capillo villoso. *Cor.* o.

Sem. 1, insidens pappo capillari.

latifolia 1. TYPHA foliis subensiformibus, spica mascula femineaq; approximatis. *Sp. pl.* 1377. (*Ger. em. p.* 46, *Moris, hist.* *f.* 8, *t.* 13. *f.* 1, *ordinis inferioris, bona.*)

Great Cat's-Tail, or Reed-mace. *Anglis.*

In the borders of ponds and lakes, as in *Gloseburn-Loch*, about eight miles above *Dumfries*, in the *Black-*

Black-Loch, at the top of the parish of *Tinwald*, and in many other places and stagnant waters. *Dr. Burges*, 4, VII.

The stalk is six feet high: the leaves a yard long, hardly an inch wide, convex on one side: the *Amentum*, or cylindrical club, which terminates the stalk, is about six inches long, of a dark brown or fuscous colour:

Cattle will sometimes eat the leaves, but *Schreber* thinks them noxious: the roots have sometimes been eaten in fallads, and the down of the *Amentum* used to stuff mattresses and cushions: and *Linnaeus* informs us, that the leaves are used by the coopers in *Sweden* to bind the hoops of their casks. In *England* the coopers use the stalks of the *Scirpus lacustris*, or Bull-rush, to fasten the joints of the timber in the heads of their casks. One stalk opened longitudinally, and laid between each juncture, answers the intention, as it prevents the oozing of the liquor through it.

SPARGANIUM. *Gen. pl.* 1041.

MASC. Amentum subrotundum. *Cal.* 3-phyllus.
Cor. 0

FEM. Amentum subrotundum. *Cal.* 3-phyllus.
Cor. 0. *Stigma* 2-fidum.
Drupa exsucca, 1-sperma.

erectum 1. SPARGANIUM foliis erectis triquetris. *Sp. pl.*
1378 (*Ger. em.* 45. f. 1. *Pet. herb.* t. 72. f. 9.
Moris.

MONOECIA TRIANDRIA.

hist. f. 8. t. 13. f. 1, ordinis medii. ♂ ejus varietas.
Ger. em. 45, f. 2. Pet. herb t. 72. f. 10. Moris.
hist. f. 8. t. 13, f. 3. ordinis medii.)

Upright Bur-reed. *Anglis.*

On the banks of lochs, and stagnant waters, not unfrequent. 4. VII.

The stalk is a yard high or more, erect, firm, and branched: the lower leaves are triangular, the upper ones plain: the male *Sphærulæ* terminate the branches, are much smaller than the echinated female ones below them, and have fuscous *Anthæ*.

The variety of most authors, the figures of which are above cited, has a stalk not above a cubit high, unbranched; the leaves, so far as we have observed, are nearly plain; and the *Anthæ* of the male *sphærules* of a pale yellow, or straw-colour'd. We are inclined to think it a distinct species. This is the kind which most commonly occurs in *Scotland*.

natans 2.

SPARGANIUM foliis decumbentibus planis. *Sp. pl. 1378. (Pet. herb. t. 72, f. 11. Oed. Dan. t. 260)*

Floating Bur-reed. *Anglis.*

In the smaller lochs of the highlands and *Hebrides* frequent, as in the little lochs between *Great* and *Little Breeze-bill*, near *Talisfer*, in *Skye*, and near *Duntulm*, in the same island. In the lochs going to *Lead-beg*, from *Little-Lock-Broom*, in *Ross-shire*.

MONOECIA TRIANDRIA.

541

shire. In the lochs of *Breadalbane*, Mr. *Stuart*. In *Loch-Lomond*, Dr. *Parsons*. It has been observed also in the lowlands by Dr. *Burges*, as in the *Castle-Loch*, near *Lockmaben*, in the moss adjoining to the lands of *Myreside*, in the parish of *Holywood*, near *Dumfries*, &c. 2. VIII. IX.

The stalk is about two feet long, the leaves four, narrow, and almost linear, being about 1-4th of an inch wide at the base, and 1-8th in the middle, ending in a point. When held up between the eye and the light they appear reticulated, but this property is not peculiar to this species. The female sphærules are commonly three, the two lowermost supported on peduncles, the uppermost sessile. The male ones are generally three, and all sessile: the leaves float upon the water like grass; but when the plant flowers, the stalk is raised above the water three or four inches, the leaves still continuing to float.

CAREX. *Gen. pl.* 1046.

MASC. Amentum imbricatum. *Cal.* 1-phyllus. *Cor.* 0.

FEM. Amentum imbricatum. *Cal.* 1-phyllus. *Cor.* 0. *Nectarium* inflatum, tridentatum. *Stigm.* 3.

Sem. triquetrum, intra nectarium.

* *Spica unica simplici.*

dioica 1. CAREX spica simplici dioica. *Sp. pl.* 1379. (*Michel. gen. t.* 32. *f.* 1. *Moris. hist. f.* 8. *t.* 12. *fig.*

fig. 22. (*mas bon.*) *Oed. Dan. t. 369, mas & fem. opt.*)

Dioecious *Carex. Anglis.*

In boggy places in the highlands and *Hebrides*, not unfrequent. 4. VI.

The stalk is round, striated, and about six or seven inches high. The leaves are narrow, almost setaceous, and about three or four inches long: the male and female spikes grow on distinct plants: the male is cylindrical, and about 3-4ths of an inch long; the female is at first oval, and about 1-4th of an inch long; but in the seedling state is produced, becomes cylindrical, and is often lengthened to half an inch. The style has two *stigmata*.

We have never yet been able to discover any permanent difference between the female of this plant and the *carex capitata* of *Linnaeus*. The figures quoted by that author for the *C. capitata*, viz. *Moris. hist. f. 8. t. 12. f. 36.* and *Mich. gen. t. 32. f. 1, 2.* do exactly correspond with the female variety of our plant, in its different stages of growth. *Linnaeus* indeed affirms, that the *C. capitata* has some male flowers at the summit of the spike; but so far as we have yet observ'd, this is by no means a constant characteristic. Those plants that have male flowers are rarely seen, and mixed with them are more individuals that have none. The figure of *Oed. Fl. Dan. t. 372.* (suppos'd by that author to be the *C. capitata Lin*) we knew nothing of. It bids more
fair

fair to be a *Scirpus* than a *Carex*, at least it has no male flowers nor radical leaves, which are described as belonging to the *C. capitata* Lin.

pulicaris 2. CAREX spica simplici androgyna; flosculis pluribus, masculis terminalibus imbricatis, capsulis retroflexis. *C. pulicaris* Lin. *sp. pl.* 1380. *characteribus emendatis.* (*Mich. gen. t.* 33. *f.* 1. *Pluk. phyt. t.* 34. *f.* 10. *Oed. Dan. t.* 166 ? *non benè.* *Moris. hist. f.* 8. *t.* 12. *f.* 21. *opt*)

Flea Carex. *Anglis.*

In bogs frequent. 4. VI.

The stalk is round and striated, except being a little flat on one side, and is about five or six inches high: the leaves are very narrow, almost setaceous, and, when the plant is in flower, generally longer than the stalk: the spike is about 3-4ths of an inch long, sometimes an inch, terminated with a narrow cylinder of several male flowers which are deciduous: the females are about six or eight, placed underneath them in the same spike, at first erectly imbricated, but afterwards horizontal, and in the seeding state deflex'd, and of a blakish colour. The style is terminated with only two *stigmata*.

pauciflora 3 CAREX spica simplici androgyna; floribus femineis subternis remotiusculis patentibus, masculino unico terminali. (*fig. nost.*)

Few-flower'd Carex. *Anglis.*

We

We found this new species of *Carex* in one place only, viz. In a boggy soil, about half-way up the mountain of *Goatfield*, in the isle of *Arran*, near a place where peat is dug, in the ascent from *Brodwick* castle. Mr. *Banks* has found the same on the coast of *Labradore*. 4. VI.

The stalk is at a medium four inches high, obscurely triangular, smooth, striated, and furnished commonly with two smooth, grass like leaves, the uppermost of which is longest, but generally shorter than the stalk. The spike is at first close, and about 1-8th of an inch long, consisting of only one pale brown male flower at the top, and sometimes two: but more commonly three greenish, long-acute female ones underneath. The male after flowering is deciduous, and the capsules become patent and nearly horizontal. The style has sometimes two, but commonly three *stigmata*.

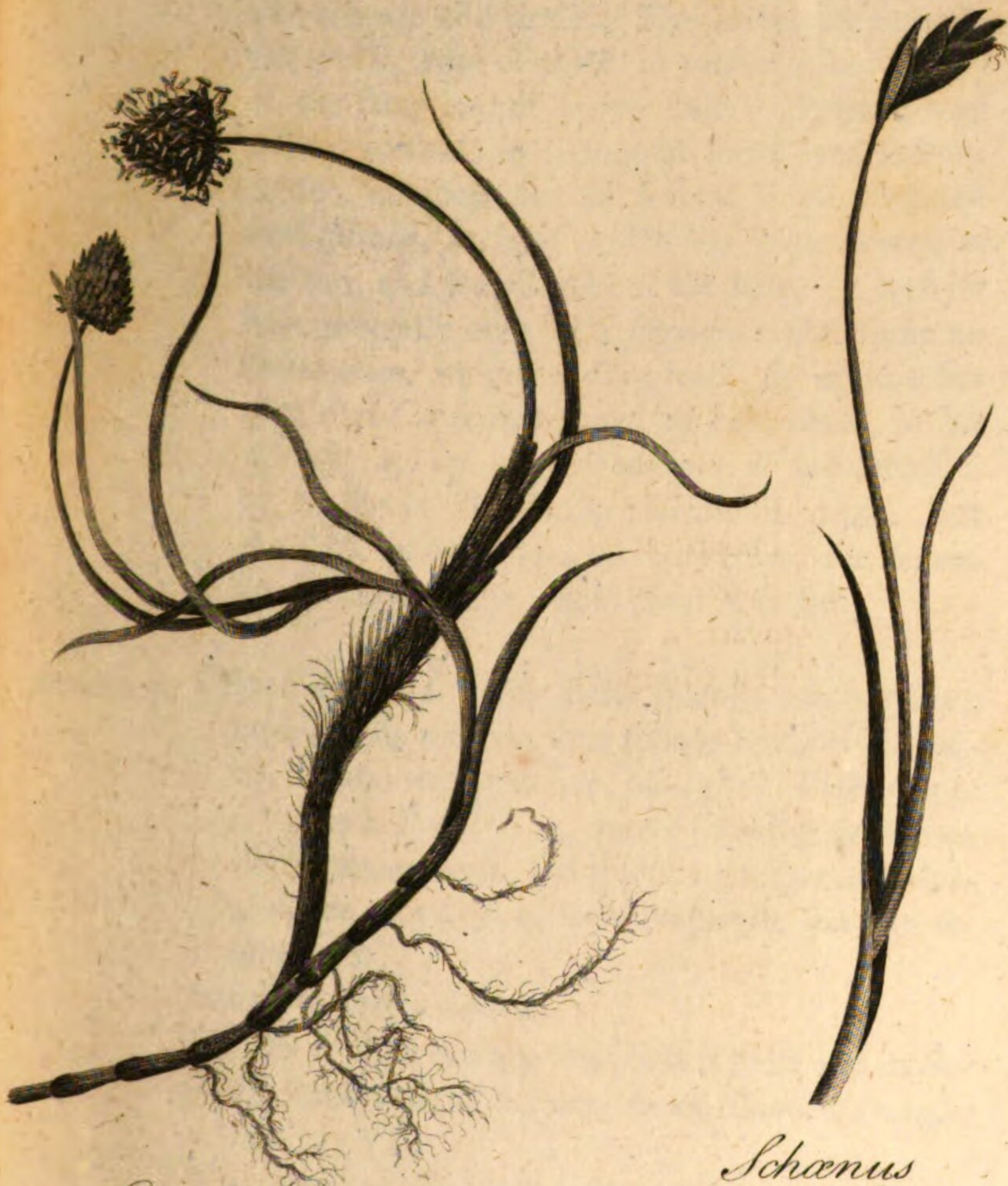
** *Spicis androgynis.*

incurva 4. CAREX spica conica, c. spiculis congestis androgynis sessilibus composita, involucro nullo, culmo incurvo. (*vid. fig. nost.*)

Curved *Carex*. *Anglis.*

This new species of *Carex* was communicated, by Dr. *Hope*, the present ingenious professor of botany in *Edinburgh*. It was discovered in deep loose sea-sand, at the mouth of the water of *Naver*, and near *Skelberry*, in *Dunrosness*, in *Sketland*. 4. VII.

The



Carex incurva.
P. 544.

Schoenus
compressus. P. 87.
a Variety.

The root creeps under the sand, and throws out several stalks about three or four inches high, which are obscurely triangular, smooth and curv'd like the arc of a circle. The leaves are smooth, channel'd, two or three in number, and nearly of the same length as the stalk: the spike is of a short conical, or triangular form, and fuscous colour, compounded of several small clustered oval *spiculæ*, each of which has male flowers at the top, and female ones at the base. The style has generally only two *stigmata*: the spike no *Involucrum*, or subtending leaf. It approaches near that *Carex* mentioned by *Scheuchzer*, in his *Agrostograph.* p. 495. *Prodrom.* t. 4. and describ'd by *Haller* in *Hist. Stirp. Helvet.* n. 1355, but the stalk of that has no curvature, the leaves are plain, and the whole plant is foetid.

arenaria 5. CAREX spica composita, spiculis androgynis; inferioribus remotioribus foliolo longiori instructis, culmo triquetro. *Sp. pl.* 1381. (*Pluk.* t. 34. f. 8. *Loes. Pruss.* t. 31, quoad habitum & statum florescentem bona, sed spiculis paucioribus. *Michel. gen.* t. 33, f. 4, benè exprimit spiculas feminantes.)

Sea-sand Carex. *Anglis.*

On the sea-shores where the sand is loose and moveable frequent, as in *Bute*, *Arran*, *Cantire*, *Oransa*, &c. 4. VII.

The root creeps horizontally under the sand, and
N n throws

MONOECIA TRIANDRIA.

throws out many triangular rough stalks, about eight or ten inches high, one or two stalks from each joint of the root: the base of the stalk under the sand is sheathed with fuscous scales: above the sand it is furnished with several leaves, the exterior ones broadest and shortest; the interior ones narrow, and commonly as long as the stalk: the spike is about an inch and a half long, generally nods, and is compounded of about ten sessile, brown, acutely-oval *spiculæ*, crowded together at the top, but more distant at the base: the lowermost *spicula* is generally subtended by an *Involucrum*, or *Bractea*, which is often as long as the whole spike: one or two more *spicule* above this are furnished with shorter ones: the lowermost *spiculæ* are female, the uppermost generally male, and the middle ones commonly androgynous.

disticha 6. CAREX spica composita subdisticha, spiculis ovatis imbricatis androgynis, folio longiori instructis, culmo triquetro. *Huds. Fl. Ang.* 347. (*Pluk. phyt. t.* 34, *f.* 7, *malè*. *Mich. gen. p.* 67, *t.* 33. *f.* 3. *melior*, sed *Bractea* deest.)

Brown distichous Carex. *Anglis.*

In bogs and marshy grounds, as at *Laggan*, near *Comrie*, not far from *Crief*, &c. *Mr. Stuart.* 4. VI.

The stalk of this is exactly triangular, otherwise we should have called it *C. uliginosa* *Lin.* It differs

fers from the *C. arenaria*, principally in place of growth, and in not having a creeping root; and from *C. leporina* in having more numerous *spiculæ*, the lowermost of which is subtended by a *Bractea*, which is often as long as the whole spike. The male *spiculæ* at the top are acutely oval, crowded together, their points often receding from the stalk, and the whole spike is of a brown colour.

leporina 7. *C. spica composita, spiculis ovatis sessilibus approximatis alternis androgynis nudis. Lin. Sp. pl. 1381. (Seguier. Ver. 1. p. 124. t. 1. f. 2. Scheuchz. Agrost. 456. t. 10. f. 15. bona. Moris. hist. f. 8. t. 12. f. 29. opt.)*

Brown naked Carex. *Anglis.*

In bogs and marshy places not uncommon. 4. VII.

The stalk is triangular, from a foot to a cubit high: the spike is composed of five or six brown oval *spiculæ*, without *bractææ*, placed near to each other on alternate sides of the stalk: most of the flowers in the *spiculæ* are female: the scales are brown, with a green nerve. Instead of a *bractea* there is sometimes a broad-bearded scale subtending the lowest *spicula*.

vulpina 8. **CAREX** spica supradecomposita infernè laxiore; spiculis androgynis ovatis sessilibus glomeratis, supernè masculis. *Sp. pl. 1382 (Michel. gen. 69. t. 33. f. 13, 14. Barrel. ic. 114. f. 11. Moris.*

MONOECIA TRIANDRIA.

hist. 3. *p.* 244. *f.* 8. *t.* 12. *f.* 24. *bona.* *Oed. Dan.*
t. 308.)

Great rough Carex. *Anglis.*

In wet shady places, and by water sides. 4. VII.

The stalk is a cubit high, triangular, erect, firm, and sharp-edged: the spike is thick and rigid, compounded of six or eight short, sessile, confluent *spiculæ*, of a yellowish green colour; the inferior ones often subtended by narrow filiform *bractææ*. The capsules, when ripe, are patent, rigid, triangular, bifid at the point, and longer than the scales.

spicata 9. C. *spiculis* subrotundis *approximatis* *androgynis* *capsulis* *ovatis* *acutis.* *Huds. Fl. Ang. p.* 349. (*Ger. em.* 21. *f.* 6. *Michel. gen. t.* 33. *f.* 5. *Moris. hist.* 3. *p.* 244. *f.* 8. *t.* 12. *f.* 27. *opt.*)

Small-spiked Carex. *Anglis.*

In moist grounds, and sometimes in dry soils, as in *Glenlocky*, in *Breadalbone*, &c. *Mr. Stuart.* 4. VI.

This is about ten inches high, smaller in all its parts, and softer than the preceding: the *spiculæ* are generally subtended by long-bearded *bractææ*, and the scales are commonly brownish, with a green nerve in the middle. *Linnaeus* and *Sco- poli* seem to include it as a variety under *C. vul- pina*, but it has the habit of a distinct species.

CAREX

muricata 10 CAREX spiculis subovatis sessilibus remotis androgynis, capsulis acutis divergentibus spinosis. *Sp. pl.* 1382. (*Mich. gen.* 69. *t.* 33. *f.* 9 & 11. *Moris. hist.* 3. *p.* 244. *f.* 8. *t.* 12. *f.* 26. *Scheuchz. gram.* 485. *t.* 11. *f.* 3. *Oed. Dan. t.* 284. *opt.*)

Small prickly Carex. *Anglis.*

In marshes and wet shady places. 4. VII.

The stalk is triangular, from six to ten inches high: the leaves are sometimes longer than the stalk: the spike is compounded generally of three or four small roundish *spiculæ*, distinct, but not far distant from each other: the capsules are acute and rigid, and when ripe diverge from each other. A small setaceous *bractea* sometimes, but not always, subtends the lowermost *spicula*.

β. We have seen, what we apprehend to be only a variety of this, a specimen with a spike consisting of six or eight *spiculæ*, more remote from each other, the lowermost an inch distant from the rest; as in *Mich. gen. t.* 33. *f.* 11.)

remota 11, C. spiculis ovatis subsessilibus remotis androgynis, foliis caulinis culmum æquantibus. *Sp. pl.* 1383. (*Pluk. t.* 34. *f.* 3. *Mich. gen. t.* 33. *f.* 16. *Moris. hist. f.* 8. *t.* 12. *f.* 17. *Oed. Dan. t.* 370)

Long-leav'd axillary Carex. *Anglis.*

In woods and shady wet places. 4. VII.

The stalk is a cubit high, slender, weak, and furnished with long narrow leaves: the *spiculæ* are
oval,

MONOECIA TRIANDRIA.

oval, distant, sessile, six or eight in number, of a pale green colour, placed in the *Alæ* of the leaves: the leaf which subtends the lowest *spicula* is higher than the top of the stalk; the other leaves above it are gradually shorter.

canescens 12 CAREX spiculis subrotundis remotis sessilibus obtusis androgynis, capsulis ovatis obtusiusculis. *Sp. pl.* 1383 (*Mich. gen. p.* 70. *n.* 5. *t.* 33. *f.* 18. *Loes. Pruss.* 117, *t.* 32, *bona. Oed. Dan. t.* 285?)

White Carex. *Anglis.*

In bogs, but not common. We observed it in some bogs in *Isla*, about two miles from the *Sound.* 4. VII.

The stalk is a foot high, or more, exactly triangular: the leaves are generally shorter than the stalk: the spike is compounded, commonly of five or six short, oval, sessile, whitish, green *spicula*, distinct from each other, but closest at the top: sometimes a narrow foliaceous *bractea* subtends the lowest *spicula*, but usually they are all naked; the scales are short, obtuse, and white, with a green nerve: the capsules are whitish, with a mixture of green, longer than the scales, but, compared with other species, short and somewhat obtuse.

This is undoubtedly the plant which *Ray*, in his *Syn. stirp. angl.* 423, intends by *Gramen cyperoides palustre elegans spica composita asperiore*, which some authors make to be a synonym of *C. Brizoides*,

zoides, Lin. which we have never yet found in Great-Britain.

*** *Spicis sexu distinctis, femineis sessilibus.*

flava 13. CAREX spicis confertis subsessilibus subrotundis, mascula lineari, capsulis acutis recurvis. *Sp. pl.* 1384. (*Ger. em. p.* 17. *f.* 1. *Moris. hist. f.* 8. *t.* 12. *f.* 19)

Yellow echinated Carex. *Anglis.*

In bogs and marshes frequent. 4. VI.

The stalk is about six or eight inches high, terminated with one yellowish-brown, narrow, linear male spike, about 3-4th of an inch long: the female spikes are roundish, echinated, most commonly three in number, but sometimes two or four: the uppermost are sessile, and placed near to each other in the *Alæ* of the leaves: the lowermost is more distant, and supported on a peduncle: the capsules stand out from each other, are acute, deflex'd, and of a yellowish green colour.

montana 14 CAREX spicis femineis sessilibus subsolitariis ovatis, masculæ approximatis, culmo nudo, capsulis pubescentibus. *Sp. pl.* 1385. *Haller. hist. stirp. Helvet. n.* 1372. Gramen cyperoides verum minimum. *Raii Syn. Angl.* 421. (*Ger. em.* 22. *f.* 8. *spica mascula bona.* *Mich. gen. t.* 32. *f.* 4? *Scheuchz. gram. t.* 10. *f.* 8, 9, 10? *Moris. hist.* 243, *n.* 11, *f.* 8, *t.* 12, *f.* 11, *non. benè quoniam spiculæ rarius pedunculata.*)

Vern

Vernal Carex. *Anglis.*

In dry mountainous pastures. π . IV.

The stalk is commonly four inches high, and seldom exceeds six, slender and filiform: the leaves are smooth, and not sharp to the touch: the male spike is fuscous, of an oval or elliptic form, about half an inch long, and most taper at the base: the filaments are like white hairs: the *Antheræ* are yellow and linear: the female spikes are short, oval, sessile, and consist of but few flowers: oftentimes there is only one placed at the base of the male, but more generally two contiguous to each other, on different sides of the stalk, and sometimes three, the lowermost subtended by a *bractea* as long or longer than the *spicula*: the scales are fuscous and smooth: the capsules oval, gibbous, when viewed through a lens pubescent, and when ripe of a dark brown or blackish colour. It flowers in the beginning of *April*, the first of all the genus.

This is the same plant which Mr. *Hudson*, in his *Flor. Ang.* p. 351, calls *C. saxatilis*, of which vid. fig. *Oed. Dan.* t. 159. a much stronger and larger plant than ours, with black capsules: the smallness of our plant, its filiform stalk, smooth leaves, early florescence, but above all the pubescence of the capsules, determined us to place it under the *C. montana* *Lin.*

CAREX

tomentosa 15 CAREX spicis femineis subpedunculatis, capsulis subglobosis tomentosis. *Syst. nat.* 617. (Scheuchz. *gram.* 425, t. 10. f. 11, quod synonyma est C. *filiformis* Lin. cum speciminibus nostris figurâ & descriptione quadrat.)

Downy Carex. *Anglis.*

This grows plentifully at the south end of *Air* links. Dr. *Hope*, 4. VII.

“ This has the outward appearance of the C. *pa-*
 “ *nicea* Lin. The stalk is triangular, the leaves
 “ narrow: the male spike is of a pale brown co-
 “ lour, oblong, and terminates the stalk: the
 “ female spikes are two in number, alternate,
 “ oblong, erect, and supported on short pe-
 “ duncles: the *bractæ* are as high as the top of
 “ the stalk: the capsules are almost globular,
 “ or slightly oval, scarcely acuminate, and re-
 “ markably downy, being surrounded with very
 “ short soft hairs: the seeds are smooth and
 “ nearly globular. *Syst. nat. in Mantiss. p.* 123.”

Obs. The male spikes in our specimens are of a dark fuscous colour: the females have no sensible peduncles, but are sessile, at least at the time of florescence, when the capsules are not globular, but rather oval-lanceolate, bifid at the extremity, and very downy: they agree extremely well with the description and figure of the *Cyperoides sylvaticum tenuifolium spicis parvis tenuibus spadiceo viridibus*, Scheuchz. *gram.* p. 425.

t. 10.

MONOECIA TRIANDRIA.

t. 10, f. 11, which *Scheuchzer* describes as having downy capsules, but this circumstance being taken no notice of by *Linnaeus*, in the specific difference of his *C. fuiformis* (of which the above is made a synonym.) tho' it is made the principal characteristic of *C. tomentosa*, we are hence led to conclude our's to be the same with the *C. tomentosa* of that author.

pilulifera 16 CAREX spicis terminalibus confertis subrotundis, masculina oblonga. *Spec. pl.* 1385. (*Pluk. alm. t.* 91. f. 8. *Moris. hist. f.* 8. t. 12. f. 16. *bona.*)

Pill-bearing Carex. *Anglis.*

In moorish grounds, as in the island of *Lamlash*, on the south-west coast of *Arran*, &c. 4. VI. VII.

The stalk is six or eight inches high, triangular and slender: the leaves are shorter than the stalk, and not sharp to the touch: the compound spike, i. e. the male and female spikes, taken collectively, is about half an inch long, at most only 3-4ths of an inch: the male spike terminates the stalk, is linear, acute, and 1-3d of an inch long; the scales fuscous, with a green *Carina*: the females are usually two or three in number, small, globular, sessile, alternate, and set closely together at the base of the male, the lowermost often subtended by a foliaceous *Bractea*, commonly shorter than the compound spike: the scales are fuscous, with a green *Carina*: the capsules are roundish, acuminate, and through a lens appear

pear to be slightly pubescent, from four to eight in each spike.

The shortness of the compound spike, the shape and colour of the male spike, and the smallness of the round female ones, will serve to distinguish this species from the *C. montana*, to which it is nearly allied.

**** *Spicis sexu distinctis ; femineis pedunculatis.*

atrata 17. CAREX spicis androgynis terminalibus pedunculatis ; florentibus erectis, fructiferis pendulis. *Sp. pl.* 1386. (*Scheuchz. gram.* 481. *t.* 11. *f.* 1, 2, *bona. Oed. Dan. t.* 158.)

Black Carex. *Anglis.*

Upon the highland mountains frequent, as upon *Benteskerny*, *Mal-gbyrды*, *Mal-nan-tarmonach*, &c. mountains in *Breadalbane*, 4. VII. VIII.

The stalks are about a foot high, triangular : the leaves 1-6th of an inch broad, and sharp to the touch : the spikes are dark, fuscous, almost black, of a thick oval form, all of similar appearance, half an inch long, and grow at the top of the stalk, on short peduncles near to each other, the lowermost subtended by a foliaceous *bractea*, as high as the top of the compound spike : the scales are almost black, with a reddish *carina* : the *stamina* are two, with yellow *antheræ* : the styles three, of a dark purple colour : the capsules green and erect at the time of floescence, but afterwards yellow, and pendulous :

lous: the spikes are androgynous, the uppermost has generally male flowers at the base, the lowermost consist chiefly of female or hermaphrodite flowers.

limosa, 18. CAREX spicis ovatis pendulis; mascula longiore erectiore, radice repente. *Sp. pl.* 1386. (*Scheuchz. gram.* 442. *t.* 10. *f.* 13. *Oed. Dan. t.* 443, quæ pro *C. globulari datur*, plantam nostram spica unica feminea benè representat)

Creeping Bog Carex. *Anglis.*

In bogs and marshes, as at *Tullybanchar*, half a mile west of *Comrie*, near *Crief*, &c. *Mr. Stuart.* 4. VI.

The root is jointed and creeps: the stalk is about a foot high, triangular, fine and slender: the leaves are very narrow and linear, about 1-12th of an inch wide: the male spike, which terminates the stalk, is cylindrical, slender, fuscous, one half or three quarters of an inch long: sometimes one only, but generally two oval female spikes, about half an inch long, grow a little below the male, half an inch distant from each, on short, slender peduncles, erect in the time of florescence, but pendulous in the seedling state: the lowermost spike is subtended by a foliaceous *bractea*, longer than the spike itself: the scales and *Carina* are both fuscous: the capsules are oval, and of a bright green: the styles are three to each *germen*: the flowers at the
summits

summits of the female spikes are generally abortive.

capillaris 19 CAREX spicis pendulis ; mascula erecta, femineis oblongis distichis, capsulis, nudis acumina-
tis. *Sp. pl.* 1386. (*Seguier. Suppl. p.* 83. *t.* 3. *f.* 1. *Scopol. Fl. Carniol.* 1152. *t.* 59. *Oed. Dan.* *t.* 168. *opt.*)

Capillary Carex. *Anglis.*

Upon the highland mountains, as on *Benteskerny*, *Craigneuliet*, and *Malgbyrdy*, in *Breadalbane*. Mr. *Stuart.* 4. VII. VIII.

When it first flowers the stalk is no more than two or three inches high, terminated with four spikes, standing as yet erect, on fine capillary peduncles, the uppermost of which is male : soon afterwards the stalk shoots up erect to the height of six or seven inches, slender and filiform, at which time the female spikes become pendant with the weight of the seeds : the lowermost of the three is subtended by a *bractea*, or floral leaf, which is not so high as the stalk : the other two have gradually shorter *Bractea*, and the uppermost has its peduncle arising from the same point as the male : the scales of the female spikes are deciduous, the capsules therefore appear naked, and are brown, oval-acute, alternate, thinly set, usually about four in a spike, rarely eight.

The leaves are narrow and linear, and the plant
may

may be readily distinguished by its small, thin, pendant spikes, and fine capillary peduncles.

pallescent. CAREX spicis pendulis, mascula erecta, femineis
20. ovatis imbricatis, capsulis confertis obtusis. *Sp. pl.* 1386. (*Pluk. alm. t.* 34. *f.* 5. *Michel. gen. t.* 32. *f.* 13. *bona.*)

Pale Carex. *Anglis.*

We observed it in marshy places not unfrequently.
4. VI. VII.

The stalk is a foot high, or more: the leaves are slightly pubescent: the male spike is linear, and of a yellowish brown colour: the female spikes are generally three, pedunculated, short, cylindrical and obtuse, one half or three quarters of an inch long, at first erect, afterwards pendant: they are all subtended by floral leaves, which are undulated at the base; but the leaf from which the lowermost spike arises is taller than the stalk: the scales are yellowish, or tawny on the edges, with a green nerve or *Carina*: the capsules are of a pale green, obtuse, and closely set.

panicea 21. C. spicis pedunculatis erectis remotis; femineis linearibus, capsulis obtusiusculis inflatis. *Sp. pl.* 1387. (*Pluk. t.* 91. *f.* 7. *spica fem. unica. Mich. gen. t.* 32. *f.* 11. *opt. Oed. Dan. t.* 261. *capsulis paucioribus.*)

Pink Carex. *Anglis.*

In marshy places and bogs common: 4. VI. VII.
The

The stalk is a foot or more high. The leaves are glaucous, sharp to the touch, and scarcely half the length of the stalk. The male spike is single linear, cylindrical, and terminates the stalk. The scales of it are fuscous, with a pallid nerve. The female spike is sometimes single, placed about an inch below the male, but more generally they are two, placed two inches or more asunder, erect, the uppermost supported on a short peduncle, the lowermost on a longer, and subtended each by a floral leaf, which sheaths the stalk at the base, and is seldom longer than it's concomitant spike. These spikes at the time of florescence are fuscous, narrow and linear; but soon afterwards they become turgid, and are one half or three quarters of an inch long. The capsules are large, oval, tumid, yellowish white, a little obtuse, and thinly set, from four to twenty in a spike. The scales are fuscous and shorter than the capsules, so that the latter swell out, and appear naked. The nerve is of a yellowish white colour.

The capsules are subject to be blighted, and are then full of a footy powder.

Pseudo-cyperus 22. CAREX spicis pendulis, pedunculis geminatis. *Sp. pl.* 1387. (*Ger. em.* 29. *f.* 2. *non mala.* *Moris. hist.* *f.* 8. *t.* 12. *f.* 5.)

Bastard-Cyperus Carex. *Anglis.*

In

MONOECIA TRIANDRIA.

In boggy places by the sides of lakes, but not common, as in *Isla*, &c. 4. VII.

The stalk is two or three feet high, triangular and very sharp edged: the leaves near half an inch wide, and very keen: the male spike is two inches long, and of a yellowish green colour: the scales long, narrow, subulate, and rough on the edges: sometimes it has a few female flowers upon it: the floral leaves are higher than the stalk, and from their *alæ* arise three, four, and sometimes five green, cylindrical, female pendent spikes, two inches long, supported on peduncles: sometimes, but not always, two peduncles arise from the *ala* of the same leaf: the capsules are very numerous and closely set, and when full grown are green, subulate, striated, reflexed, and terminated with a double spine: the scales are green, very narrow, almost setaceous, and rough on the edges.

cæspitosa.

23.

CAREX spicis erectis cylindricis ternis subseffilibus, mascula terminali, culmo triquetro. *Sp. pl.* 1388. *Rail Syn.* 3. p. 418. n. 4 & 5. (*Moris. f. 8. t. 12. f. 14. bona.*) *C. glauca. Scop. Carniol.* 1157.

Turfy-pink-leav'd Carex. *Anglis.* Starr. *Scotis.* Perhaps a corruption of *Sture*, signifying rough or harsh.

In marshes and wet pastures frequent. 4. VI.

The

The stalk is a foot or more high : the leaves glaucous : the male spikes are generally two, but vary from one to four : the scales are obtuse, and almost black, having a yellowish dorsal line or *Carina* : the female spikes are commonly two or three, exactly cylindrical, an inch or an inch and a half long, either sessile, or supported on short peduncles, always erect at first, but commonly pendulous when the seeds are ripe and heavy : the lowermost floral leaf is usually as high as the stalk, and the uppermost of the female spikes has often male flowers at the top : the capsules are short, small, obtuse, very numerous, close, and regularly ranged, greenish when young, but of a dark tawny colour when ripe ; and, when viewed thro' a lens, appear to have a slight short pubescence : the scales are oval, and almost black, having a yellow dorsal line : the style is bifid and white.

- β. There is a variety of this a yard high, having female spikes two inches long or more, but in other respects similar : this seems to be the kind figured in *Moris. hist. f. 8. t. 12. f. 3*, and perhaps also by *Michel. t. 32. f. 12. & Loes. Pruss. p. 116. t. 30.*

distans 24. CAREX spicis remotissimis subseffilibus, bractea vaginali, capsulis angulatis mucronatis. *Sp. pl.* 1387. *Syst. nat.* 618. (*Moris. hist. f. 8. t. 12. f. 18.*)

Distant Carex. *Anglis.*

In marshes and wet pastures not unfrequent. 4.
VI. VII.

The stalk is a cubit high: the male spike is commonly single, an inch long; the scales obtuse and fuscous, with a yellowish green nerve: the female spikes are sometimes two, most commonly three, rarely four, erect, axillary, generally shorter than the male, the uppermost sessile, the others on short peduncles: the floral leaves are shorter than the stalk, and sheath it at their base: but the principal character of this species is the distance of the female spikes from each other, the lowermost being frequently six inches below the next above it, and that often an inch and a half from its superior. The capsules are fuscous, smooth, and angular, having a strong, acute rostrum, terminated with a slightly bifid point; the angles green. The scales are dark, fuscous, the nerve green, and extended to a point.

sylvatica 25

C. spicis pendulis, mascula erecta, femineis filiformibus pedunculo brevioribus, capsulis acutis distantibus. *Huds. Fl. Ang. p. 353. C. vesicariae. var. β. Lin. Sp. pl. 1389. (Lobel. ic. p. 60. Morris. hist. ox. f. 8. t. 12. f. 9. Oed. Dan. t. 404. sed spicae nimis crassae.)*

Wood Carex. *Anglis.*

In the highland woods not unfrequent. 4. VI.

The

The stalk varies from a foot to two feet high : the leaves are 1-5th of an inch wide : the male spike is commonly single, narrow and linear, of a greenish-yellow colour, from half an inch to one and a half long : the scales oval-acute and yellowish, with a green nerve : the female spikes are three, or more, frequently four, from one to two inches long, narrow and linear, either green or of a yellowish green colour, erect at first, but afterwards pendent, supported on fine slender peduncles, the lowermost of which are longer than the spikes they support : the uppermost of the female spikes arises from the *ala* of the same *bractea* as the male spike, but is not so tall as that : the floral leaves are not higher than the stalk, seldom so high : the capsules are triangular and greenish, with an acute rostrum, and slightly bifid point : they are alternate, and thinly set, which is a strong character of the species : the scales are oval-acute, of a greenish yellow colour, and sometimes white, with a green *carina* : the *stigmata* are three in number, and of a red colour.

Linnaeus informs us, that the *Laplanders* comb and dress this species of *Carex* as we do flax, and in the winter season stuff their shoes and gloves with it, as a defence against the extreme rigour of the climate. They apply some other species to the same purpose, but this seems to have the preference in common use.

pendula 26. CAREX spicis pendulis, mascula erecta femineis cylindricis pedunculo longioribus, capsulis acuminatis. *Huds. Fl. angl. p. 352.*

Carex spicis femininis pendulis longissimis, capsulis mucronatis ovatis. *Hall. hist. n. 1396.*

Carex maxima. *Scopol. Carniol. n. 1166. (Moris. hist. ox. f. 8. t. 12. f. 4. Barrelier ic. 45)*

Great pendulous Carex. *Anglis.*

In shady wet places, but not common; found in *Breadalbane* by Mr. *Stuart*, 4. VII.

The stalk is three or four feet high: the leaves half an inch broad, their edges and middle nerve sharp to the touch: the male spike is generally single, and often five or six inches long: the scales lanceolate and fuscous: the female spikes are commonly five, sometimes six, the lowermost frequently six or seven inches long, either sessile or supported on very short peduncles, but on account of their length always pendulous: the tops of these spikes have often male flowers: the floral leaves are scarcely so high as the stalk: the capsules are very numerous, oval, short, green, striated, slightly acuminate, and closely set, except at the base of the spike, which is the slenderest part: the scales are fuscous, having a green, lanceolate, acute dorsal nerve.

I have seen what I take to be a variety of this, having three male spikes, and the females not more than two or three inches long, more erect,
and

and about four in number, otherwise similar in all its parts. *Morison's* figure resembles it, *Hist. ox. f. 8. t. 12. f. 3.*

***** *Spicis sexu distinctis, masculis pluribus.*

acuta 27. CAREX spicis masculis pluribus, femineis subsessilibus, capsulis obtusiusculis. *Sp. pl.* 1388? *Raii Syn.* 417. n. 1. *Haller hist. n.* 1404. (*Moris. hist. f. 8. t. 12. f. 1. Michel. gen. p. 57. n. 10 & 11. tab. 32, f. 6. 7.*)

Great sharp vernal Carex. *Anglis.*

By the sides of lakes, rivers and ditches, common.
4. V.

The stalk is triangular, very sharp-edged, and varies from a foot to a yard high: the leaves are glaucous, and half an inch wide; the edges and *Carina* very sharp and cutting if rubbed downwards: the male spikes vary in number from three to five, the uppermost is near two inches long, the others are shorter, and placed a little below, about the base of it: the scales are narrow and lanceolate, of a dark brown or fuscous colour: the female spikes vary from three to five, but are most commonly four: the upper is sessile, and the top of it has often male flowers; the lowermost have short peduncles and are two or three inches long, all erect, of a greenish fuscous colour, nearly cylindrical, or slightly swelling in the middle: the floral leaves are as high as the stalk: the scales are oval-lanceolate, with a long point

MONOECIA TRIANDRIA.

point or beard, of a fuscous colour, with a greenish dorsal line: the capsules are of a triangular conic form, with a bifid point, smooth, striated, closely set, and of a dull greenish fuscous colour: the style is trifid and fuscous. Such is the plant we intend, with which the descriptions of *Ray* and *Halier*, &c. agree, and the figures of *Morison* and *Micheli*; but as the capsules are by no means obtuse, it is doubtful whether it be the *C. acuta*, of *Linnaeus*.

- β. There is a variety of this with the male spikes black, the leaves narrower, and the plant smaller in all its parts, flowering in wet pastures in *April*.
Ray's Syn. p. 417. n. 2.

In *Italy* the leaves of this plant are used by the glass-makers to bind their wine-flasks, by the chair-makers to bottom chairs, and by the coopers to place between the junctures of the timber in the heads of their casks, in the same manner as the leaves of the *Typha* are used in the same country, and the stalks of the *Scirpus lacustris* in *England*.

vesicaria 28 CAREX spicis masculis pluribus, femineis pedunculatis, capsulis inflatis acuminatis. *Lin. Sp. pl.* 1388. *Raii Syn. ang.* p. 419. n. 9. (*Moris. hist. f.* 8, t. 12. f. 8.)

Bladder Carex. *Anglis.*

and marshy places, but not very common.
in the bogs of *Isla*, and Mr. *Stuart* gathered

gathered it upon *Benteskenny*, in *Breadalbane*, &c.
 4. VII.

The stalk is two feet high: the male spikes are two or three in number, narrow, linear, acute, the uppermost about two inches long, of a pale brown colour: the female spikes are commonly two or three, the uppermost sessile, the lowermost on a short peduncle: they are about two inches long, erect, cylindrical, and of a yellowish green colour: the scales are oval, fuscous, with pale green edges and dorsal lines, and nearly of the length of the capsules, which are of a short oval or roundish inflated figure, terminated with a bifid point. They are numerous and closely set, almost at right angles to the central rib, of a yellowish green colour at first, but of a pale brown when ripe.

inflata 29. CAREX spicis masculis pluribus, femineis sessilibus, capsulis ovatis inflatis acuminatis, bracteis duplo longioribus. *Huds. Fl. Ang. p. 354. var. γ. C. vesicariæ. Lin. Sp. pl. 1389. Raii Syn. p. 420. n. 14. (Moris. hist. f. 8. t. 12 f. 6.)*

Short thick-inflated Carex. *Anglis.*

In bogs and marshes, as about *Finlarig*, in *Breadalbane*, &c. Mr. *Stuart*. 4. VII.

This is made a variety of the preceding by *Linnaeus*, but it differs from it in the following particulars.

The spikes are shorter, and all sessile; the capsules are of a longer, oval, or more conic form, three times larger, greatly inflated, not above half so numerous, and of a pale yellow colour,
 twice

twice the length of the scales. These differences seem to be more than accidental.

hirta 30. *C. spicis remotis, masculis pluribus femineis subpedunculatis erectis, capsulis hirtis, Sp. pl. 1329. (Pluk. alm. t. 34. f. 6. Moris. hist. f. 8. t. 12. f. 10. opt. Oed. Dan. t. 379. foliis nimis angustis, nec hirsutis, ideoque similis C. tomentosæ nostræ, sed Oed. Dan. t. 425. melior est)*

Hairy Carex. Anglis.

In wet pastures, as at *Dumbarton* castle, by the river-side, &c. 4. VI.

The root creeps laterally under ground: the stalk varies from six inches to a foot in height: the male spikes are two or three in number; the females two or three, erect, and remote from each other: the capsules are inflated and conical, with a bifid point. The back of the leaves, their base, which sheaths the stalk, and the capsules, are covered with soft downy hairs, which readily distinguish this species.

ERIOCAULON. *Gen. pl. 100.*

Characteres reformati a D. Hope, vid. *Mantiss. Lin.* p. 167.

Cal. Perianthium commune hæmisphæricum; foliolis orbiculatis, subæqualibus, appressis, persistens, continens florem hæmisphæricum, aggregatum, ex flosculis numerosissimis.

3. * *Masculi flosculi in medio disci.*

Cal.

MONOECIA TRIANDRIA.

569

Cal. Perianthium proprium diphyllum.

Cor. dipetala, erecta, obtusa.

Stam. Filamenta quatuor, corollulæ inserta, breviora.

Antheræ subrotundæ.

♀ * *Feminei* flosculi in ambitu copiosissimi.

Col. Perianthium proprium diphyllum.

Cor. monopetala, bipartita.

Pist. Germen superum, didymum.

Stylus setaceus, bipartitus.

Stigmata simplicia.

Per. Capsula dicocca.

Sem. solitaria, subrotunda.

Recept. nudum.

decangulare **ERIOCAULON** culmo decangulari, foliis ensiformibus. *Sp. pl.* 129. (*Pluk. t.* 409, *f.* 5. *foliis vitiosis. Pet. gaz. t.* 6. *f.* 2. *foliis nullis. vid. fig. in Voyage to the Hebrides, vol. I. tab. xxxix.*)

Net-wort. *Anglis.*

In two or three small fresh-water lochs, about a mile west of *Loch-Sligachan*, in the isle of *Skye*, but particularly in a small lake called *Loch-na-Caiplich*, close to the road-side between *Sligachan* and *Drynock*, in such abundance that the white fibres of the roots are thrown upon the edges of the loch in the same manner as wrack and other weeds on the sea-shores. These are the only places in which this plant has yet been discovered in *Great-Britain*. It flowers towards the end of *September*.

It

MONOECIA TETRANDRIA.

It grows under the water at the bottom of the lake, but when in flower the top of the stalk is raised above the water, at which time it measures from a foot to 18 inches high.

The root is fibrous: the fibres white, cylindrical, diaphanous, and curiously jointed with numerous tranverse diaphragms: the leaves are sword-shap'd, about two inches long, and surround the base of the stalk to the number of a dozen or more: the stalk is sheath'd at the base, but naked upwards, a little twisted in its growth, obtutely angular, the number of angles variable, but frequently ten: both leaves and stalk are transparent, and when held up between the eye and the light appear to be regularly and beautifully reticulated, with numerous fine rectangular meshes: the head of compound flowers, which terminates the stalk, is about the size of a large garden pease, and appears to be of a dark grey colour. Upon dissection the leaves of the common *Calyx* are found to be mouse-coloured, of each peculiar *Calyx*, the same colour, but these last fringed on the edges with short white capillary *papillæ*. The petals are white, with a dark spot near their summit, and edged with the same elegant fringe. The *Antheræ* are black. The generic characters will supply the remainder of the description.

LITTORELLA.

MONOECIA TETRANDRIA.

571

LITTORELLA. *Mantiss. Lin. p. 160. n. 1328.*

Plantago. Gen. pl. 142.

Characteres reformati, a D. Bergio.

♂ * *Masculi,*

CAL. *Perianthium* tetraphyllum, erectum.

COR. monopetala. *Tubo* longitudine calycis; *Limbo* quadripartito, erecto, persistente.

STAM. *Filamenta* quatuor, filiformia, longissima, receptaculo inserta. *Antherae* cordatae.

♀ * *Feminei* in eadem planta.

CAL. nullus.

COR. monopetala, conica, ore obsolete trifido, persistens.

PIST. Germen oblongum. *Stylus* filiformis, longissimus. *Stigma* acutum.

PER. Corolla vestiens.

SEM. *Nux.* unilocularis.

OBS. *Flos. Plantaginis, Fructus vero alienus.*

lacustris 1. LITTORELLA. *Mantiss. Lin. p. 295. Plantago uniflora. Sp. pl. 167. (Pluk. t. 35. f. 2. Morris. hist. f. 8. t. 9. f. 30. Oed. Dan. t. 170. opt.)*

Grass leav'd Plantain. Anglis.

This is very frequent, on the edges of almost all the highland lakes. 4. VII. VIII.

The root shoots out long running fibres, which take root afresh, and thus in a short time cover the

MONOECIA TETRANDRIA.

the brink of the lakes with tufts of semicylindrical linear acute leaves, about two inches long: three or four, or more, naked stalks arise from between the leaves, about an inch and a half long, terminated each with one greenish male flower, furnished with four white filaments, near an inch long, standing out of the flower. The female flowers are sessile, commonly two, sometimes three, placed at the base of the male stalk.

This seems to be the plant which *Dillenius* has figured under the name of *Subularia repens, foliis convexo planis. Hist musc. p. 542. t. 81.*

BETULA. *Gen. pl.* 1052.

MASC. *Cal.* 1-phyllus, 3-fidus, 3-florus.

Cor. 4-partita.

FEM. *Cal.* 1-phyllus, sub 3-fidus, 2-florus.

Sem. utrinque membrana alata.

alba 1.

BETULA foliis ovatis acuminatis ferratis. *Sp. pl.* 1393. (*Ger. em.* 1478. *Blakwell. t.* 240. *Dubamel Arbor. I. p.* 100. *t.* 39.)

The Birch Tree. *Anglis.* Birk. *Scotis.* Am beatha. *Gaulis.*

The highland woods abound with this tree. In many places is a beautiful variety, with long pendent twigs hanging to the ground, like the weeping-willow, *h.* IV. V.

The

The outer bark is white: the leaves heart-shap'd, except that they have no indenture at the base: the twigs slender and pendent in the old trees, but erect in the young ones. The male catkins appear in autumn, and continue through the winter; they are long and pendulous. The female ones are short and oval, and appear in the Spring.

Various are the œconomical uses of this tree. The highlanders use the bark to tan their leather, and to make ropes. The outer rind, which they call *Meilleag*, they sometimes burn instead of candles. With the fragments of it, dexterously braided or interwoven, the *Laplanders* make themselves shoes and baskets. Large thick expanded pieces, with a hole in the middle to fit the neck, they use instead of a furtout to keep off the rain. The *Americans* make entire canoes of it; and the *Russians*, *Poles* and *Swedes*, in lieu of tiles, cover their houses with it.

The inner bark, before the invention of paper, was used by the ancients to write upon. The wood was formerly used by the Highlanders to make their arrows, but is now converted to better purposes, being used by the wheelwright for ploughs, carts, and most of the rustic implements; by the turner for trenchers, bowls, ladles, &c. the knotty excrescencies affording a beautiful vein'd wood, and by the cooper for hoops. To which may be added, that it affords
excellent

MONOECIA TETRANDRIA.

excellent fuel, and makes the best of charcoal, and the foot is a good lamp-black for making printer's ink.

The celebrated *Moxa*, or touchwood, of the Laplanders, used by them as a cautery in most acute disorders, is made of the yellow fungous excrescencies of the woody part of this tree; which sometimes swell out between the fissures and crevices of it, and resemble in substance the agaric.

The leaves are a fodder for sheep and goats, and yield a yellow dye.

The catkins are the favorite food of the bird called a *Siskin* or *Aberdevine*.

The small branches serve the highlanders for hurdles, and side-fences to their houses.

And the pliant twigs are well known to answer the purposes of cleanliness and correction.

There is yet another use to which this tree is applicable, and which I will beg leave strongly to recommend to my Highland friends: The vernal sap is well known to have a saccharine quality, capable of making sugar, and an wholesome diuretic wine. This tree is always at hand, and the method of making the wine is simple and easy. I shall subjoin a receipt:

“ In the beginning of *March*, while the sap is
 “ rising, and before the leaves shoot out, bore
 “ holes in the bodies of the larger trees, and put
 “ foffets therein, made of elder sticks, with
 the



Betula nana P. 5/5.

Moses Griffiths del.

P. Marshall sc.

“ the pith taken out, and then put any vessels
 “ under to receive the liquor. If the tree be
 “ large, you may tap it in four or five places
 “ at a time without hurting it; and thus from
 “ several trees you may gain several gallons of
 “ juice in a day. If you have not enough in
 “ one day, bottle up close what you have, till
 “ you get a sufficient for your purpose, but the
 “ sooner it is used the better.

“ Boil the sap as long as any scum rises, skimming
 “ it all the time. To every gallon of liquor
 “ put four pounds of sugar, and boil it after-
 “ wards half an hour, skimming it well; then
 “ put it into an open tub to cool, and when
 “ cold, tun it into your cask; when it has done
 “ working, bung it up close, and keep it three
 “ months. Then either bottle it off, or draw it
 “ out of the cask after it is a year old.”

This is a generous and agreeable liquor, and would
 be a happy substitute in the room of the poisonous
 whiskey.

nana 2.

BETULA foliis orbiculatis crenatis. *Sp. pl.* 1394.
 (*Fl. lappon.* p. 266. t. 6. f. 4. *Oed. Dan.* t. 91. &
fig. nost.)

Dwarf Birch. *Anglis.*

This grows in great abundance in *Corry-yeallin*, on
 the west side of the hill, directly north from
Miggerny, in *Glenlyon*, in *Breadalbane*, as also in
 some

MONOECIA TRIANDRIA.

some of the moors of *Loch-Glass*, in *Rossshire*, &c. It has been found also in the lowlands, as on the lands of *Bertram*, about a mile from *Carnwath*, in *Clydesdale*. h. V.

This shrub is erect, and about a yard high, the bark of a red, or blackish purple colour; the leaves sessile and nearly circular, crenated on the edges, with ten to fourteen notches, three leaves commonly produced from each gem. The catkins are oval, erect, and sessile; the styles are purple. It has never yet been discovered in *South Britain*.

The leaves of this dye a better yellow than those of the preceeding.

In northern climes the catkins and seeds are the principal food of grouse, ptarmigans; and the humble *Laplander* is content with a skin of the rein-deer, and a *substratum* of *dwarf-birch* for his bed.

alnus 3. BETULA pedunculis ramosis. *Sp. pl.* 1394. (*Ger. em.* 1477. f. 1. *Loes. Pruss.* 10. t. 1.)

The Alder Tree. *Anglis.* Eller. *Scotis.*

Am fearna. *Gaulis.*

In wet and boggy grounds frequent. h. V.

The bark of this tree is blackish, the wood red and brittle: the leaves are of a dark green colour, roundish figure, crenated on the edges, smooth, but viscous to the touch: the nerves on
the

the under side have spongy balls at the angles of their ramifications, like as in the leaves of the lime-tree. The male catkins are cylindrical, appear in the autumn, and continue till the spring. The females are of a short conical form, like a small fir-cone.

- β. There is a variety of this tree, with hoary leaves, more acute, and not viscous. The bark white. *Ger. em.* 1477. f. 2. Some authors make it a species.

The timber of this tree endures moisture well, and is therefore esteem'd for making water-pipes, or any other use, where the situation of it must be wet or damp, in which state it turns black like ebony. It is used also by the wheelwright and turner, for making wheels of carts, bowls, spoons, rakes, heels for women's shoes, clogs, pattens, &c. The highlanders often make chairs of the wood, which are very handsome, and of the colour of mahogany.

The knots furnish a beautiful vein'd wood for cabinets, and the branches make good charcoal.

The bark will dye yarn of a fuscous colour; and the Laplanders tinge their leathern garments red with saliva after masticating the inner bark.

The Highlanders dye their yarn of a black colour, by boiling it with the bark mixed with copperas.

The leaves have been sometimes used in tanning leather, and sheep will feed on them and the smaller branches.

URTICA. *Gen. pl.* 1054.

MASC. *Cal.* 4-phyllus. *Cor.* o. *Nectarium* centrale, cyathiforme.

FEM. *Cal.* 2-valvis. *Cor.* o. *Sem.* 1, nitidum.

urens 1. URTICA foliis oppositis ovalibus. *Sp. pl.* 1396.
(*Ger. em.* 707. f. 3. *Moris. hist. f.* 11. t. 25. f. 4. *ordinis medii.* *Pet. herb. t.* 1. f. 10.)

Lesser stinging Nettle. *Anglis.*

In waste places, on dunghills, &c. ☉. VI-VIII.

The stings or prickles of this are very numerous and inflammatory: the leaves of a roundish oval figure, and light green colour: the male and female flowers grow in different parts of the same plant, in crowded oblong green clusters, erect, nearly sessile, in the *axæ* of the leaves.

dioica 2. URTICA foliis oppositis cordatis, racemis geminis. *Sp. pl.* 1396. (*Ger. em.* 706. f. 2. *Moris. hist. f.* 11. t. 25. f. 1. *ordinis medii.* *Pet. herb. t.* 1. f. 9. *mas. Blackwell. t.* 12. *mas.*)

Common stinging Nettle. *Anglis.*

Feanntag, Deantag. *Gaulis.*

In waste places, and under hedges. ♀. VII.

The male and female flowers grow on distinct plants; the clusters branched, and generally in pairs.

The *Aculei*, or stings of the nettle, have a small bladder at their base, full of a burning corrosive liquor:

liquor: when touch'd, they excite a blister, attended with a violent itching pain, though the sting does not appear to be tubular, or perforated at the top, nor any visible liquor to be infused into the puncture made by it in the flesh. It seems certain, however, that some of this liquor is insinuated into the wound, tho' invisibly, since the stings of the dry'd plant excite no pain.

Nettle-tops in the Spring are often boil'd and eaten by the common people instead of cabbage-greens.

In *Arran*, and other islands, a rennet is made of a strong decoction of nettles: a quart of salt is put to three pints of the decoction, and bottled up for use. A common spoonful of this liquor will coagulate a large bowl of milk very readily and agreeably, as we saw and experienced.

The stalks of nettles are so like in quality to hemp, that in some parts of *Europe* and *Siberia* they have been manufactured into cloth, and paper has been made of them.

The whole plant, particularly the root, is esteem'd to be diuretic, and has been recommended in the jaundice and nephritic complaints. It is also reckoned astringent, and of service in all kinds of hæmorrhages, but is at present but little in practice.

The roots boil'd with allum will dye yarn of a yellow colour.

MONOECIA POLYANDRIA.

The *Larvæ*, or caterpillars of many species of butterflies, feed on the green plant, and sheep and oxen will readily eat the dry'd.

POLYANDRIA. *Stamina ultra 7.*

CERATOPHYLLUM. *Gen. pl. 1065.*

MASC. *Cal. multipartitus. Cor. o. Stam: 16-20.*

FEM. *Cal. multipartitus. Cor. o. Pist. 1. Styl. o. Sem. 1, nudum.*

demersum 1 CERATOPHYLLUM foliis dichotomo-bigemis, fructibus trispinosis. *Sp. pl. 1409. (Vaill. act. gal. 1719. p. 21. t. 2. f. 1. Loes. Pruss. 67. t. 12. benè.)*

Horned Pondweed. *Anglis.*

It grows under the water, in flow streams and ditches. 4. VII.

The stalk is round, smooth, long, and greatly branched: the leaves grow verticillate, about eight in a whirl: they are setaceous, semibifid, stiff, and ferrated with a few spines: at the extremities of the branches the whirls are crowded together in thick green clusters. The male and female flowers grow sessile in the alæ of the leaves.

MYRIOPHYLLUM. *Gen. pl. 1066.*

MASC. *Cal. 4-phyllus. Cor. o. Stam. o.*

FEM.

MONOECIA POLYANDRIA. 581

FEM. *Cal.* 4-phyllus. *Cor.* o. *Pist.* 4. *Styl.* o.
Sem. 4, nuda.

spicatum 1. MYRIOPHYLLUM floribus masculis interrupte
spicatis. *Sp. pl.* 1409. (*Baub. Prodr.* 73. *t.* 73.
Petiv. herb. 1. 6. f. 5 & 7.)

Spiked Water Millfoil. *Anglis.*

In lakes and still waters frequent. *u.* VII. VIII.

The leaves grow under the water, verticillate, four
or five in a whirl: each leaf is about an inch
long, finely feathered, or pinnated with about
15 pair of setaceous pinnules, and an odd one
at the end. The stalk is round, branched,
and the upper part, which bears the flowers, is
raised out of the water, and destitute of leaves.
Upon this part the flowers grow four in a whirl,
at little distances from each other to the top of
the stalk, the uppermost being male, the lower-
most female. The *Antheræ* are green, the *Stig-
mata* red.

QUERCUS. *Gen. pl.* 1070.

MASC. *Cal.* 5-fidus ferè. *Cor.* o. *Stam.* 5-10.

FEM. *Cal.* 1-phyllus, integerrimus, scaber. *Cor.*
o. *Styli* 2-5. *Sem.* 1, ovatum.

robur 1. QUERCUS foliis deciduis oblongis supernè latiori-
bus, sinubus aculioribus angulis obtusis. *Sp. pl.*
1414. (*Ger. em.* 1339. f. 1. *Loes. Pruss* 211. *t.* 69.
Blackwell. *t.* 487.)

The common Oak. *Anglis.*

An

MONOECIA PODYANDRIA.

An darach. *Gaulis.*

In the lowlands frequent; in the highlands very dwarfish, seldom rising to a trunk, unless in sheltered situations near gentlemen's houses. h. V.

There are two varieties of this tree, the first has one or two acorns, supported on long footstalks, the leaves more deeply divided, and the wood paler.

The other has six or seven acorns in a cluster, supported on very short footstalks: the leaves are less divided, of a firmer and more laurel-like texture; the tree itself is more humble, and the timber harder and higher-colour'd.

The oak is remarkable for its slowness of growth, bulk, and longevity. It has been remarked that the trunk has attained to the size only of fourteen inches in diameter, and of some to twenty, in the space of fourscore years.

As to bulk we have account of an oak belonging to Lord Powis, growing in *Broomfield* wood, near *Ludlow*, in *Shropshire*, in the year 1764, the trunk of which measured 68 feet in girth, 23 in length, and which, reckoning 90 feet for the larger branches, contained in the whole 1455 feet of timber, round measure, or 29 loads and five feet, at 50 feet to a load.

And, with respect to longevity, *Linnaeus* gives account of an oak 260 years old; but we have had some traditions of some in *England* (how far to

to be depended upon we know not) that have attain'd to more than double that age.

Besids the grand purposes to which the timber is applied in navigation and architecture, and the bark in tanning of leather, there are other uses, of less consequence, to which the different parts of this tree have been referred.

The highlanders use the bark to dye their yarn of a brown colour, or, mixed with copperas, of a black colour. They call the oak "*The king of all the trees in the forest,*" and the herdsmen would think himself and his flock unfortunate if he had not a staff of it.

The saw-dust from the timber, and even the leaves of the tree, have been found capable of tanning, though much inferior to the bark for that purpose.

So great is the astringency of the bark, that in a larger dose, like the *Peruvian* kind, it has been known to cure the ague.

The expressed juice of the galls or oak-apples (excrescencies occasioned by a small insect call'd a *Cynips*) mixed with vitriol and gum-arabic, will make ink.

The leaves of the oak are very subject to be covered with a sweet viscous juice, call'd honey-dew, which bees and other insects are very fond of. The leaves of a great variety of *Phalenæ* also feed upon them.

The

The acorns are a good food to fatten swine and turkies ; and, after the severe winter of the year 1709, the poor people in *France* were miserably constrain'd to eat them themselves.

There are, however, acorns produced from another species of oak, which are eaten to this day in *Spain* and *Greece*, with as much pleasure as chestnuts, without the dreadful compulsion of hunger ; agreeably to what *Ovid* has delivered of the Golden Age :

Contentiq ; cibus nullo cogente creatis,
Arbuteos foetus, montanaq ; fraga legebant,
Cornaq ; & in duris hærentia mora rubetis,
Et quæ deciderant patula Jovis arbore glandes.
Ovid. Met. Lib. 1, v. 103.

FAGUS. *Gen. pl. 1072.*

MASC. *Cal. 5-fidus, campanulatus. Cor. o. Stam. 12.*

FEM. *Cal. 4-dentatus. Cor. o. Styli 3. Capsula (Calyx antea) muricata, 4-valvis. Sem. 2.*

sylvatica 1. FAGUS foliis ovatis obsoletè ferratis. *Sp. pl. 1416.*
(*Ger. em. 1444.*)

Beach-Tree. *Anglis.*

In woods and gentlemen's plantations frequent, whether indigenous or not is doubtful. *h. V.*

This tree grows very large, and spreads wide its branches, affording a grateful shade. The bark is

is white, the leaves smooth and glossy, waved on the edges but not serrated.

The mast or seeds of this tree will yield a good oil for lamps; they are a food to squirrels and mice, and swine are very fond of them; but the fat of those which feed on them is soft, and boils away, unless hardened before they are killed by some other food.

The wood is brittle, very fissile, durable in water, but not in the open air. It is the best of all woods for fuel, and is sometimes used by the wheelwright and turner, to make axes, spokes, bowls, &c. sword-scabbards are also made of it, and shoemakers lasts, and formerly bookbinders used it in making covers to books.

The *FAGUS castanea*, or *Spanish* chesnut, is a tree which often occurs in gentlemen's plantations, and thrives well, but we do not look upon it as a native.

CARPINUS. *Gen. pl.* 1073.

MASC. *Cal.* 1-phyllus, squama ciliata. *Cor.* o.
Stam. 20.

FEM. *Cal.* 1-phyllus, squama ciliata. *Cor.* o.
Germino 2. *Styli* singulis 2. *Nux* ovata.

betulus 1. CARPINUS squamis strobilorum planis. *Sp. pl.*
1416. (*Ger. em.* 1479.)

The horn-beam tree, or Horse Beech-tree. *Anglis.*

In woods and gentlemen's plantations. *h. V.*

This tree is low, being seldom more than ten or twelve feet high: the bark is white, the wood hard, tough and white: the leaves oval, nervous, wrinkled, and sharply ferrated: the scales of the female catkins are hastate, or lanceolate, with a lobe on each side at the base.

The wood is esteem'd by the mill-wright and wheelwright for pullies, axles, shafts, &c.

Very neat espalier hedges, by the sides of garden-walks, are often form'd of the young trees: the inner bark will dye yarn of a yellow colour, and cattle are fond of the leaves.

CORYLUS. *Gen. pl.* 1074.

MASC. *Cal.* 1-phyllus, 3-fidus, squamiferis, 1-florus. *Cor.* o. *Stam* 8.

FEM. *Cal.* 2-phyllus, lacerus. *Cor.* o. *Styli* 2.
Nux ovata.

avellana 1. CORYLUS *stipulis* ovatis obtusis. *Sp. pl.* 1417.

(*Ger. em.* 1438. *f.* 2. *Blackwell. t.* 293.)

The Hasel-nut tree. *Anglis.*

An Calltain. *Gaulis.*

In woods frequent. *h. III. IV.*

The male catkins appear in the Autumn, and wait for the expansion of the female gems in the Spring, which are sessile, and placed near the base of the males. The styles are of a bright red colour, long and setaceous.

The

The kernels of the fruit have a mild, farinaceous, oily taste, agreeable to most palates. Squirrels and mice are fond of them, and some birds, such as jays, nutcrackers, &c. A kind of chocolate has been prepared from them, and there are instances of their having been formed into bread. The oil express'd from them is little inferior to the oil of almonds, and is used by painters, and by chemists, for receiving and retaining odors. The charcoal made of the wood is used by painters in drawing.

Some of the Highlanders, where superstition is not totally subsided, look upon the tree itself as unlucky, but are glad to get two of the nuts naturally conjoin'd, which is a good omen. These they call *Cnò-chomblaich*, and carry them as an efficacious charm against witchcraft.

MONADELPHIA.

PINUS. *Gen. pl.* 1077.

MASC. *Cal.* 4-phyllus. *Cor.* o. *Stam.* plurima.
Antheræ nudæ.

FEM. *Cal.* Stroboli, squama 2-flora. *Cor.* o.
Pist. 1. *Nux* ala membranacea excepta.

sylvestris 1. PINUS foliis geminis, primordialibus solitariis glabris. *Sp. pl.* 1418. (*Ger. em.* 1356. f. 1. *Blackwell. t.* 190.)

The

The Wild Pine, or Scotch Fir. *Anglis.*

An Giuthas. *Gaulis*

This is the only species of pine which grows wild in *Scotland*. It is found scattered in many places amongst the highland mountains, but large natural forests of it are seen of many miles extent about *Invercauld* and *Braemar*, in *Aberdeenshire*, in *Strath Spey*, going from *Badenoch* to *Inverness*, on the side of *Loch Arkeg*, in *Lochaber*, and *Loch Rannoch*, in *Atbol*. Others are found about *Loch Loyn*, *Glen Moriston*, and *Strath Glas*, in *Inverness-shire*, and some at *Coygach*, in *Strathnavern*, *Dirry-Monach*, in *Sutherland*, and near *Loch-mari*, in *Ross-shire*. To which we may add those of *Abernethy* and *Rotby murcha*, belonging to the family of *Grant*, *Glenmore* the Duke of *Gordon's*, and *Glen-Taner*, the property of Lord *Aboyne*. See *Pennant's Tour and Voyage*. b. V.

Few trees have been apply'd to more uses than this. The tallest and straightest are form'd by nature for masts to our navy. The timber is resinous, durable, and applicable to numberless domestic purposes, such as flooring and wainscoting of rooms, making of beds, chests, tables, boxes, &c. From the trunk and branches of this, as well as most others of the pine tribe, tar and pitch is obtained. By incision, *barras*, *Burgundy pitch*, and *turpentine*, are acquired and prepared. The resinous roots are dug out
of

of the ground in many parts of the Highlands, and, being divided into small splinters, are used by the inhabitants to burn instead of candles. At *Loch-Broom*, in *Ross-shire*, we observed that the fishermen made ropes of the inner bark; but hard necessity has taught the inhabitants of *Sweden*, *Lapland*, and *Kamschatka*, to convert the same into bread. To effect this they, in the Spring season, make choice of the tallest and fairest trees, then stripping off carefully the outer bark, they collect the soft, white, succulent interior bark, and dry it in the shade. When they have occasion to use it, they first toast it at the fire, then grind, and, after steeping the flour in warm water, to take off the resinous taste, they make it into thin cakes, which are baked for use. On this strange food the poor inhabitants are sometimes constrain'd to live for a whole year; and, we are told, thro' custom, become at last even fond of it. *Linnaeus* remarks, that this same bark-bread will fatten swine; and humanity obliges us to wish, that men might never be reduced to the necessity of robbing them of such a food.

The interior bark, of which the above-mention'd bread is made, the *Swedish* boys frequently peel off the trees in the Spring, and eat raw with greedy appetite.

From the cones of this tree is prepared a diuretic oil, like the oil of turpentine, and a resinous extract

MONOECIA SYNGENESIA.

extract, which has similar virtues with the balsam of *Peru*.

An infusion or tea of the buds is highly commended as an antiscorbutic.

The farina, or yellow powder, of the male flowers, is sometimes in the Spring carried away by the winds, in such quantities, where the trees abound, as to alarm the ignorant with the notion of its raining brimstone.

The tree lives to a great age, *Linnaeus* affirms to 400 years.

SYNGENESIA.

BRYONIA. *Gen. pl.* 1093.

MASC. *Cal.* 5-dentatus. *Cor.* 5-partita. *Filamenta* 3.

FEM. *Cal.* 5-dentatus. *Cor.* 5-partita. *Stylus* 3-fidus. *Bacca* subglobosa, polysperma.

alba L. * BRYONIA foliis palmatis utrinq; calloso-scabris. *Sp. pl.* 1438. (*Ger. em.* 869. *Blackwell. t.* 37. *Miller. ic.* 71. *bon.*)

White Bryony. *Anglis.*

This plant is sometimes seen in garden-hedges, and near houses, but is probably not indigenous. *Dr. Burges.* 4. V.

The roots are very large, white and branched, and, by the help of moulds, have been formed into human

human shape, and exhibited to the ignorant for mandrakes. The stalk is six feet long, angular, rough, branched, weak and climbing: the leaves are covered with white rough hairs, and are divided into five lobes, each of which is obscurely triangular, and irregularly dented: at the base of each leaf arise the flowers, and a spiral tendril. The flowers are of a yellowish white colour, streaked with green veins. The berries when ripe are red. *Miller* has observed that the young plants are *diœcious*, the old ones *monœcious*.

The whole plant is strongly purgative. The root is bitter, acrid, foetid, and nauseous. One drachm of it is the common dose; two drachms have been given to dropical persons with good success, but it is rarely prescribed in the present practice.

CLASSIS XXII.

DIOECIA.

DIANDRIA.

SALIX. ♂. *Ament.* squama. *Cor.* nulla. *Stam.* 2,
raro 5.

♀. *Ament.* squama. *Cor.* 0. *Stig.* 2. *Caps.*
2-valvis. *Sem.* papposa.

TRIANDRIA.

EMPETRUM. ♂. *Cal.* 3-partitus. *Cor.* 3-petala.
♀. *Cal.* 3-partitus. *Cor.* 3-peta-
la. *Styli.* 9. *Bacca* 9-sperma.

* *Carex dioica.* * *Valeriana dioica.*

TETRANDRIA.

MYRICA. ♂. *Ament.* squama. *Cor.* nulla.
♀. *Ament.* squama. *Cor.* nulla. *Styl.* 2.
Bacca monosperma.

* *Urtica dioica.*

* *Rhamnus catharticus.*

PENTANDRIA.

HUMULUS. ♂. *Cal.* 5-phyllus. *Cor.* nulla.
♀. *Cal.* 1-phyllus. *Cor.* nulla.
Styl. 2. *Sem.* calyce alatum.

HEXANDRIA.

H E X A N D R I A.

* *Rumex Acetosa* & *Acetosella*.

O C T A N D R I A.

POPULUS. ♂. *Ament.* lacerum. *Cor.* o. *Nectar.*
ovatum. *Stam.* 8-16.♀. *Ament.* lacerum. *Cor.* o. *Stigm.*
4-fid. *Caps.* 2-valvis. *Sem.* pap-
posa:RHODIOLA. ♂. *Cal.* 4-partitus. *Cor.* 4-petala.♀. *Cal.* 4-partitus. *Cor.* o. *Pist.* 4.
Caps. 4, polyspermæ.

E N N E A N D R I A.

MERCURIALIS. ♂. *Cal.* 3-phyllus. *Cor.* o. *Stam.*
9-12.♀. *Cal.* 3-phyllus. *Cor.* o. *Styl.*
2. *Caps.* 2-cocca.HYDROCHARIS. ♂. *Cal.* 3-phyllus. *Cor.* 3-pe-
tala.♀. *Cal.* 3-phyllus. *Cor.* 3-pe-
tala. *Styl.* 6. *Caps.* infera,
6-locularis.

D E C A N D R I A.

* *Lychnis dioica*. vid. sub DECANDRIA 5-gynia.

Q q

I C O S A N D R I A.

D I O E C I A.

ICOSANDRIA.

- * *Rubus chamaemorus*. vid. sub. ICOSAND. polygynia.

MONADELPHIA.

JUNIPERUS. ♂. Ament. Cor. nulla.

Stam. 3.

♀. Cal. 3-partitus. Cor. 3-petala.

Styl. 3. Bacca infera, 3-sperma, calycina.

TAXUS. ♂. Cal. 4-phyllus. Cor. o. Anther. 8-fidæ.

♀. Cal. 4-phyllus. Cor. o. Stigm. 1. Bacca 1-sperma, recutita.

SYNGENESIA.

- * *Gnaphalium dioicum*. vid. sub. SYNGENES. Polygam. Superfl.

DIANDRIA.

DIANDRIA.

SALIX. Gen. pl. 1098.

MASC. *Amenti squamæ. Cor. o. Glandula baseos nectarifera.*

FEM. *Amenti squamæ. Cor. o. Styl. 2-fidus. Caps. 1-locularis, 2-valvis. Sem. papposa.*

* *Foliis glabris ferratis.*

pentandra

SALIX foliis ferratis glabris, flosculis pentandris.

1.

Sp. pl. 1442. (Flor. Lapon. 370. t. 8. fig. Z. Gmel. sib. I. p. 153. t. 34. f. 1. foliis nimis angustis.)

Sweet bay-leav'd Willow.

In the Duke of *Argyle's* woods at *Inverary*, and about *Roslin*, near *Edinburgh*, and by the roadsides between *Moffat* and the *Lead-hills* plentifully, &c. h. VI.

This frequently grows to a tree ten or twelve feet high, with a trunk as large as a man's thigh: the twigs are of a reddish colour, ting'd with yellow: the leaves are stiff, oval-lanceolate, shining smooth on both sides, finely serrated with close numerous cartilaginous dents, when full grown about three inches long, and one and a half wide: their footstalks short, broad, and sprinkled with glands: each scale in the male catkin has usually five *stamina*, but often six, and sometimes seven. These catkins are very sweet-scented.

The down of the seeds, mixed with a third part of cotton, has been proved to be a very good substitute for cotton itself. Goldfinches, and some other birds, line their nests with the down of this and other species of the genus. The *Swedes* in *Scania* dye a yellow colour with the leaves.

amygdalina 2. SALIX foliis ferratis glabris lanceolatis petiolatis, stipulis trapeziformibus. *Sp. pl.* 1443. (*Fig. nulla fidenda.*)

Almond-leav'd Willow. *Anglis.*

On the banks of rivers. *Dr. Parsons.* 2. V.

This generally puts on the appearance of a shrub, but, if permitted, will grow up to a low tree. The twigs are smooth, red, and pliant; the leaves the largest of the genus, being commonly five inches long, and about an inch and a half wide, smooth and lanceolate; their footstalk and middle rib red, their edges strongly serrated with glandular dents. At the base of the footstalks is a pair of large semicordate, serrated *stipule*, which are widest towards the extremity of the twigs, and are not always found at the bottom of them. At the insertion of the footstalk into the leaf are usually found some glandular tubercles, which sometimes swell out into short linear processes. This is a very doubtful species, for want of a knowledge of the parts of fructification.

The twigs of this kind are used for making baskets.

SALIX

fragilis 3. SALIX foliis ferratis glabris ovato-lanceolatis, petiolis dentato-glandulosis. *Sp. pl.* 1443. (*Flor. Lapon.* 349. *t.* 8. *f.* B.)

Crack Willow. *Anglis.*

On the banks of rivers in the low-lands frequent.
h. V.

This grows to one of the largest trees of the genus; the branches are very brittle at the joints; the leaves are large, four inches long, and one and a half broad, distinctly and deeply serrated, smooth and shining on the upper side, glaucous underneath; they have rarely any *stipula*, but, instead of them the footstalks are dotted with prominent glands. The catkins have two or three fugacious leaves at the base of the peduncle.

This tree is sometimes planted by the sides of walks. The males grow up speedily, and soon form a shade.

Bees are fond of the male flowers of this and other species.

helix 4. SALIX foliis ferratis glabris lanceolato-linearibus, superioribus oppositis obliquis. *Sp. pl.* 1444. (*Baugh. hist.* 1. *p.* 213. *f.* 2. *Arduini Mem.* *p.* 67. *ic.*)

Smooth narrow-leav'd Willow. *Anglis.*

By the sides of rivers, but not very common, as about *Curr* and *Laggan*, near *Comrie*, in *Strath-Errn*, &c. IV. h.

This

This may be rank'd among the smaller kinds of willows, being seldom more than eight or ten feet high. The bark, so far as we have observ'd, is of a light green colour; the twigs tough and pliant; the scales of the gems reddish; the leaves are about an inch and a half long, and 1-3d of an inch wide; the lower ones are generally alternate, the upper ones opposite, or nearly so, smooth on both sides, but often a little glaucous underneath. Some of them are entire on the edges throughout, but usually the upper part is serrated, and the base entire. The figure of the leaves is near to the *linear-lanceolate*, but so that their widest diameter is above the middle part.

The catkins are three quarters of an inch long, cylindrical, sessile, lateral, and subtended by three leaves. The scales are concave, roundish, black and hairy; those of the male catkins have each but one *stamen*. The *anthera* is quadrangular before it bursts, and orange-colour'd; the powder yellow; the capsules covered with a satin down.

purpurea 5 SALIX foliis ferratis glabris lanceolatis inferioribus oppositis. *Sp. pl.* 1444. (*Fig. nulla.*)

Purple Willow. *Anglis.*

On the banks of the *Esk*, near *Netherby*, in *Eskdale*, &c. *h. V.*

We

We know no other difference between this and the preceding, except in the colour of the bark, and the size of the leaves, for their position and figure is the same, and therefore we are inclined to think, with *Haller*, that it is only a variety of the foregoing. The bark is of a dark red colour; the leaves are from two to three inches long, and from one half to three quarters of an inch wide.

myrsinitis 6 *SALIX* foliis ferratis glabris ovatis venosis? *Sp. pl.* 1445. (*Flor. Lapon.* 353. t. 8. f. F. & t. 7. f. 6.)

Whortle-leav'd Willow. *Anglis.*

Upon the Highland mountains, as upon *Ben-Achulader*, in *Glenurchy*, *Mal-ghyrdu*, in *Breadalbane*, and on *Craig-vore*, a high-projecting rock on the west side of *Loch-Laraig-an-lochbain*, a small lake between *Loch-Tay* and *Glen-Lyon*. *Mr. Stuart.* h. VI.

The plant we intend is about a foot high, the twigs of the female reddish, of the male dull green. The leaves are exactly oval and acute, smooth vein'd, finely and regularly serrated, glaucous underneath, about 3-4ths of an inch long, and 2-5ths of an inch wide. The female catkins are about half an inch long, the male shorter. Three small, spurious, oval, entire leaves, covered with a silken down on the under side, are placed

at

DIOECIA DIANDRIA.

at the base of the catkins, and arise from the same bud or gem.

The scales are of a reddish brown colour, obtuse and downy. The *stamina* are two to each scale.

The capsules are conical, and covered with short white satin down. The *stigmata* quadrifid.

Linnaeus's figures of the *S. myrsinites* agree with our plant precisely in the leaves, but not so well in the catkins.

herbacea 7. SALIX foliis ferratis glabris orbiculatis. *Sp. pl.* 1445. (*Flor. Lappon.* 355. t. 8. f. H. & t. 7. fig. 3. 4. *Boccon. mus.* 2. p. 19. t. 1. fig. ult. *Mart. Spitsburg.* 47. t. G. fig. B. *Oed. Dan.* t. 117. opt.)

The left Willow. *Anglis.*

It is frequent upon the top of all the Highland Alps, as on *Ben-Lomond*, half a mile before you come to the top abundantly; on *Goatfield*, in the Isle of *Arran*, on the paps of *Jura*, on *Baikewall* in *Rum*, on the mountains of *Skye*, and those of *Breadalbane*, &c. h. VI.

It is not an herbaceous plant, but truly a shrub or tree, and the smallest yet known. The branches are hard and black, and commonly not above one or two inches high. The leaves, usually of the size of a silver penny, smooth, vein'd, and ferrated. The catkins rarely consist of more than five flowers. The scales are yellow and ciliated, the capsules smooth, the pistils smooth and red.

I have

3. I have gathered a variety of this plant nine inches high, with leaves, some of them as large as a shilling. It puts on this appearance when it grows out of the crevices of the rocks, and is very old.

** *Foliis glabris integerrimis.*

reticulata 8 *SALIX* foliis integerrimis glabris ovatis obtusis.
Sp. pl. 1446. (*Flor. Lapon.* 359. t. 8. f. L. 3
 t. 7 f. 1. 2. *Oed. Dan.* t. 212.)

Wrinkled Willow. *Anglis.*

It grows upon many of the Highland mountains, in a talky soil, as upon *Creg-chaillech*, *Mal-gbyrdy*, and *Mal-grea* mountains, in *Breadalbane*, &c. 4. V, VI.

The branches are about a finger's length, and spread prostrate on the ground. The leaves are thick, obtusely oval, or nearly circular, little more than half an inch in diameter, reticulated with wrinkles; when young covered with white silky hairs, especially underneath, but smooth when old, and then green on the upper side, and glaucous on the lower. Three arise from a gem, supported each on footstalks. The catkin springs from the same gem as the leaves, standing on a thick downy peduncle. The scales are obtuse, concave, and downy, the capsules downy. The *stamina* 2, the *antheræ* flesh-coloured.

*** *Foliis*

*** *Foliis integerrimis villosis.*

aurita 9. *SALIX* foliis integerrimis utrinque villosis obovatis appendiculatis. *Sp. pl.* 1446. (*Flor. Lapon.* 369. *t.* 8. *f.* y. *Ger. em.* 390. *f.* 3.)

Small round-eared Willow. *Anglis.*

In woods, hedges, &c. frequent. *h.* V. VI.

This grows up to a small tree, from a yard to eight feet high, the twigs hard and divaricated. The leaves are about the size of a sixpence when full grown, not quite round, but obtusely oval, being wider at the end than at the base: they are wrinkled with large swelling veins, and, when young, are woolly on both sides, but this wears off in some degree from the upper side, as the leaves grow older: at the base of their footstalks are small roundish *stipule*, or auricles, which are largest towards the summits of the branches. The catkins are small, short, and oval, about half an inch long, the males yellow, the scales minute, lanceolate, and downy; the females white, the capsules woolly, almost cylindrical, but swelling a little at the base, and supported on short footstalks.

lanata 10. *SALIX* foliis utrinque lanatis subrotundis acutis? *Sp. pl.* 1446. (*Flor. Lapon.* 368. *t.* 8. *f.* x. & *t.* 7. *f.* 7. *benè.*) *Salix* foliis integerrimis, ovato-lanceolatis, subtus sericeis, julis ovatis. *Haller. bist. n.* 1651.

Downy

Downy Willow. *Anglis.*

In the valleys amongst the Highlands, as at *Finlarig*, at the head of *Loch-Tay*, &c. $\frac{1}{2}$. V. Mr. *Stuart*.

This grows to a small tree, six or eight feet high.

The twigs are smooth, of a reddish green. The leaves exactly oval, and entire on the edges, about an inch long, and $\frac{3}{5}$ th of an inch broad, covered with white downy hairs, particularly on the under side, less so on the upper, which by degrees turns green, and loses most of its hairs, whilst the under side still continues downy. The catkins are oval, an inch long, and thick set, supported on short, thick, woolly peduncles. The scales are downy, oval, and of a grey fuscous colour. The capsules white and downy.

It is a matter of great doubt to which species of *Linnaeus* this can be referred. It partakes both of his *S. glauca* and *lanata*, and agrees not perfectly with either, but as it seems clearly to be that kind described by *Haller*, in his *Hist. Stirp. Helvet. n. 1651*, of which he supposes the *S. lanata* *Lin.* to be only a variety, and with the figure of which mine agree, I have chose, with that great author, to reduce it to that species, especially as more or less down on the leaves of plants is known often to arise only from the accidents of different situation and exposure.

SALIX

lapponum 11 SALIX foliis integerrimis hirsutis lanceolatis. *Sp. pl.* 1447. (*Flor. lappon.* 366. t. 8. f. T.)

Woolly Lapland Willow. *Anglis.*

On the Highland mountains, as on *Creg-chaillech* and *Mal-gkyrdy*, in *Breadalbane*, &c. *Mr. Stuart.*
h. VI.

This shrub grows to the height of four or five feet. The bark is smooth and reddish, the young twigs white and hoary. The leaves grow alternate, are lanceolate and entire, very woolly on both sides, but mostly on the under side; about an inch and a quarter long, and half an inch wide. The longitudinal nerve sometimes divides the leaf unequally, so that one side of it is a little wider than the other, and the edges are often slightly waved. The capsules are covered with a thick white woolly down. The upper surface of the leaves, when old, loses most of its down, and becomes of a dark green colour.

This willow, and the *Betula nana*, are the constant Summer fuel of the *Laplanders*, while they attend their rein-deer dairy on the alps of the North.

arenaria 12 SALIX foliis integris ovatis acutis, supra subvillosis, subtus tomentosis? *Sp. pl.* 1447. (*Flor. lappon.* t. 8. f. O. 2. foliis paulo nimis lanceolatis pro nostra planta. *Gmel. Sibir. I. p.* 164. t. 36. f. 1.
Raii

Raii Syn. p. 447. n. 3. t. 19. f. 3. mejor. Oed. Dan. t. 197. quæ pro S. arenaria ponitur cum nostrâ non concordat. nec. Haller hist. p. 195. t. 14. n. 1642, folia enim nimis lanceolata.)

Sand Willow. *Anglis.*

Upon the sea shores amongst loose blowing sand, as in *Cantire*, between *Macrianeſb* and *Bar*, &c. 4. V.

The species we mean is an humble, diffuse, prostrate shrub, seldom above two feet high. The leaves are of a thick substance, alternate, and elliptical, the largest an inch long, and half an inch wide, the smallest three quarters of an inch long, and a quarter of an inch wide. They are covered with white silken hairs on both sides, but particularly so on the under side. The dark green colour of the upper surface appears thro' the hairs. At the base of the leaves are sometimes found small *stipulae*, but they are generally without them. The scales and capsules are hoary.

So obscure are the descriptions of authors, that it is doubtful whether the plant above proposed be the same which *Linnaeus* intends by his *S. Arenaria*, tho' it certainly is the kind which *Dillenius* terms *Salix pumila foliis utrinq. candicantibus & lanuginosis*. *Raii Synops. p. 447. n. 3*, and which we believe to be only a variety of the following, arising from situation and soil.

SALIX

repens 13. SALIX foliis integerrimis lanceolatis utrinque subpilosis, caule repente. *Sp. pl.* 1447. (*Ger. em.* 1391. f. 6. *bona. Flor. lappon. t.* 8. f. R. quæ pro *S. fusca* designatur, nostram benè repræsentat.)

Little creeping Willow. *Anglis.*

This is frequent in moorish grounds, heaths, and sometimes in woods. 4. V.

This seldom rises above six or eight inches high. the twigs are dark, red, and decumbent. The leaves are generally oval, but are sometimes lengthened so as to become lanceolate; their general size about 2-5ths of an inch long, and 1-5th wide, often less than that. They are smooth on both sides, except at their first eruption, when they are slightly hairy, but particularly so underneath. This villosity soon wears off, and the upper surface becomes of a dark green colour, the under one glaucous: the upper ones are alternate, the lower ones nearly opposite, and supported on short footstalks. The catkins are lateral, oval, and numerous; the scales brown and hairy, the filaments and *antheræ* yellow, the capsules white and woolly at first, but reddish and almost smooth when ripe. We have never yet been able to discover any essential difference between this and *S. fusca* Lin. and it is probable that *S. rosmarinifolia* may be only a variety of the same. See *Haller hist. n.* 1644.

Foliis

**** *Foliis fuserratis villosis.*

caprea 14. SALIX foliis ovatis rugosis, subtus tomentosis, undatis, supernè denticulatis. *Sp. pl.* 1448. (*Flor. lappon. t. 8. f. S. bona. Oed. Dan. t. 245. opt.*)

Common Sallow. *Anglis.* Saugh. *Scotis.*

Seileach. *Ganlis.*

In woods and dry pastures common. *h. V.*

This grows to the height of eight or ten feet, and frequently forms a large tree. The young twigs are whitish and downy. The leaves are variously shaped even upon the same branch; their usual figure is elliptical, but the transverse diameter differs much in different leaves: the largest are three inches long, and two broad; some are two inches long, and an inch and a quarter broad; others two inches long, and three quarters of an inch broad, so as to be of an elliptical lanceolate form; some again are acute at the end, others wide and obtuse. They are all generally slightly ferrated on the edges towards the upper part, and undulated towards the base, their upper surface downy at first, but afterwards smooth, or the veins at most only hairy; the under surface wrinkled, hoary, soft and downy. The catkins are cylindrical, short and thick. The capsules downy at first, but when ripe almost smooth.

There

There is a singular variety of this, with narrower elliptic leaves, about two inches and a half long, and three quarters of an inch wide, having large semicircular serrated *stipulae* at the base of their footstalks. These leaves are serrated on the edges, and downy underneath like the above. It seems to be a kind of hybridous shrub, between the *S. caprea* and *S. aurita*. We imagine it to be the *S. caprea* var. γ . *Lin. Sp.* 1448.

The inhabitants of the Highlands and *Hebrides* frequently use the bark of these to tan their leather. The wood is smooth, soft white and flexible. It is often used to make handles for hatchets, prongs, spades, &c. and to furnish shoemakers with cutting-boards and whetting-boards, to smooth the edges of their knives upon. The caterpillars of numerous *Phalænae*, and other insects, feed upon the leaves of this and other species of the genus.

viminalis 15 *SALIX* foliis subintegerrimis lanceolato-linearibus longissimis acutis subtus sericeis, ramis virgatis. *Sp. pl.* 1448. (*Fig. nulla.*)

The Osier. *Anglis.*

In moist grounds, especially near villages, frequent.
h. V.

This shrub grows to be ten or twelve feet high, and is very quick in growth. The twigs are long, slender, and pliant; the leaves three, and sometimes

Sometimes four inches long, and not above 2-5ths of an inch broad, so that they are very long, narrow, and lanceolate. Their upper surface is generally green and smooth, the under one white and hoary. The nerves underneath are parallel, but diverge almost to right angles with the middle rib. The edges of the leaves are either slightly dented or undulated, but being turned back this is hardly perceptible. At the base of the leaves, especially near the top of the twigs, are generally found some linear subulate *stipulae*. The catkins arise out of distinct gems from the leaves, and are sessile, cylindrical, and shorter than the leaves. The scales are oval and fuscous, the capsules downy.

β. I have seen a variety of this, the leaves of which on the under side were of a paler green than the upper, but had no visible hoariness.

The twigs are much used for making baskets, bird-cages, and for hooping wooden bottles, &c.

alba 16.

SALIX foliis lanceolatis acuminatis ferratis utrinque pubescentibus, ferraturis infimis glandulosis. *Sp. pl.* 1449. (*Ger. em.* 1389. f. 1. *Blackwell* t. 327. *benè*.)

Common white Willow. *Anglis.*

Seileach. *Gaulis.*

By river sides, and near villages. *h. V.*

This grows to a large tree, 20 feet high, or more.

It is quick in growth, but soon decays, especially

R. r

if

if it be lopped. The bark is rough, and full of chasms. The branches greenish, or light brown. The leaves are of an elliptic lanceolate form, at a medium about three inches long, and little more than half an inch wide. The recent ones have their upper surface pubescent, and their edges obscurely serrated: the adult ones are nearly smooth above, silken and glaucous underneath, and distinctly serrated on the edges with numerous small glandular dents. At the insertion of the footstalk, at the base of the leaf, are usually placed a pair, and sometimes more, of small black glandular tubercles, which are slightly hairy. The catkins are cylindrical, slender, about an inch and a half long, and spring from the same gem as the leaves. The scales are oval-acute, of a tawny colour, and hairy on the inside. The capsules are smooth, and not crowded, green at first, tawny when ripe. The male catkins have a fragrant smell.

This is a good tree to plant in avenues, being very speedy of growth, and affording an agreeable shade, and beautiful silvery appearance.

The wood and young branches are pliant, the old ones brittle.

The bark will tan leather, and dye yarn of a cinnamon colour, and is of a quality so very astringent that in a scruple to a dose it has been found of great service in intermittent fevers. *Haller* affirms, from his own experience, that a bath made

made of the decoction of it, proved very beneficial to children troubled with rickets.

The inner bark has afforded a miserable substitute for bread to the necessitous inhabitants of *Camtschatka*.

The wood is used to make poles, stakes, hoops for casks, &c. and for fuel.

Cattle will feed on the leaves; and the *Arabs* distil their celebrated *Calaf* water from the catkins of the *S. aegyptiaca* *Lin.* or any other species that has fragrant catkins. This water they use as a cooling liquor, or as a febrifuge.

In the Summer season the leaves have been observ'd to distil a clear liquor, which *Scopoli* affirms to be owing to the liquefaction of the spume which envelops an insect called *Cicada spumaria*. *Scop. Entomolog.* 331. & *Flor. Carniol.* 1212.

Obs. I have received from my often-mentioned friend, the Rev. Mr. *Stuart*, junior, of *Killin*, in *Breadalbane*, some specimens of other *Caledonian* willows; but for want of observing them in their different stages of growth, they were found too insufficient to determine the species in so difficult and vague a genus.

TRIANDRIA.

EMPETRUM. *Gen. pl.* 1100.MASC. *Cal.* 3-partitus. *Cor.* 3-petala. *Stam.* longa.FEM. *Cal.* 3-partitus. *Cor.* 3-petala. *Styli* 9.
Bacca 9-sperma.*nigrum* 1. EMPETRUM procumbens. *Sp. pl.* 1450. (*Ger. em.* 1383. *f.* 9.)Black-berried Heath, Crow, or Crake-berries.
*Anglis.**Præas-nam-Fiantag.* *Fiantaga.* *Dearca-fithich.*
*Gaulis.*It is frequently found both in the dryest and most barren rocky soils, and in bogs and moorish grounds. *h. V.*

This is a small decumbent shrub, with branches a foot long. Its outer bark brown and deciduous, the interior yellow. The branches are rough, with the remainder of the pedicles of such leaves as are fallen off. The leaves are numerous, and crowded, thick and firm, of a small elliptic figure, divided in the middle by a white nerve, and generally grow verticillate, four in a whirl. The flowers are axillary and sessile. The *calyx* is of a pale green colour, the petals reddish. The filaments very long and red, the *antheræ* and pistils almost black. The berries are green at first, but black when ripe. This shrub has been sometimes found with hermaphrodite flowers, but very rarely.

The

The Highlanders frequently eat the berries, but they are no very desirable fruit. If taken too copiously they are reported sometimes to bring on a slight head-ach. Boil'd in allum-water they will dye yarn of a black fuscous colour.

MYRICA. *Gen. pl.* 1107.

MASC. *Amenti squama lunata. Cor. o.*

FEM. *Amenti squama lunata. Cor. o. Styli 2. Baccæ 1-sperma.*

gale 1. MYRICA foliis lanceolatis subserratis, caule suffruticoso. *Sp. pl.* 1453. (*Ger. em.* 1414. *Oed. Dan.* t. 327. *bon.*)

Gale, Goule, Sweet Willow, or Dutch Myrtle. *Anglis.*

Roid. Gaulis. Gaul. Scotis.

In bogs and moorish grounds in the Highlands and Hebrides very frequent and plentiful. *h. V.*

This shrub grows erect, and is two or three feet high. The branches are covered with a dark fuscous bark. The leaves are obtusely elliptical, or wedge-shap'd, and serrated towards the extremity. The gems or buds which produce the catkins are placed at the summits of the branches, above the leaves, so that when the work of fructification is perfected, the extremities of the flowering twigs perish, and the inferior buds produce leaves. The catkins are of a short, oval figure, yellowish brown colour, and are

DIOECIA TETRANDRIA.

are frequently sprinkled with shining, resinous, golden particles. The *Pericarpium* is properly a coriaceous berry.

The leaves have a bitter taste, and a sweet, agreeable, myrtle-like odor.

In *Bute*, *Arran*, and most of the *Hebrides*, as well as in the Highlands, an infusion of the leaves, in the way of tea, is frequently given to children to destroy worms.

In *Uist*, and other of the western isles, and in *Glenald*, and other places of the Highland continent, it is sometimes used instead of hops for brewing beer.

In *Isle* and *Jura* the inhabitants garnish their dishes with it, and lay it between their linen and other garments, to give a fine scent, and to drive away moths.

The *Swedes* dye their yarn with it of a yellow colour, and sometimes use a strong decoction of it to kill bugs and lice, and to cure the itch.

The cones boiled in water will yield a scum like bees wax, capable of being made into candles, similar to those which the *Americans* make of the berries of *Myrica cerifera*. *Lin.* or candle-berry myrtle.

Linnaeus, from the smell of the plant, is induced to suspect that *Camphor* might possibly be prepared from it.

PENTANDRIA.

PENTANDRIA.

HUMULUS. *Gen. pl.* 1116.MASC. *Cal.* 5-phyllus. *Cor.* 0.FEM. *Cal.* 1-phyllus, oblique patens, integer.
Cor. 0. *Styli* 2. *Sem.* 1, intra calycem foliatum.*lupulus* * 1. HUMULUS. *Sp. pl.* 1457. (*Ger. em.* 885. *f.* 1. *fem.*)
Hops. *Anglis.*

It is sometimes found in hedges near houses and gardens, but is probably not indigenous. 4. VI.

The stalk is weak and climbing; it creeps up the support in a spiral, ascending always from the right hand to the left. This and the leaves are rough to the touch: the upper leaves are heart-shaped, the lower ones are divided into three lobes, serrated on the edges, and grow in pairs on long footstalks. The male flowers grow on a distinct plant, on branched peduncles: the females grow on peduncles, in pairs, of the form of a cone, or *strobilus*, composed of large oval imbricated *calyces*, containing each one or two seeds.

The young shoots boil'd, and eaten in the Spring, like asparagus, are by many reckoned a delicacy.

The hops themselves are bitter and aromatic; a strong decoction of them is esteem'd a powerful *Lithontriptic*; but their principal use is in brewing ale, to prevent its turning sour.

OCTANDRIA.

OCTANDRIA.

POPULUS. *Gen. pl.* 1123.MASC. Amenti *Cal.* lamina lacera. *Cor.* turbinata, obliqua, integra.FEM. Amenti *Cal.* & *Cor.* maris. *Stigma* 4-fidum. *Caps.* 2-locularis. *Sem.* multa, papposa.*alba* * 1.POPULUS foliis subrotundis dentato-angulatis subtus tomentosis. *Sp. pl.* 1463. (*Ger. em.* 1486. f. 1. & 1487. f. 5.)White Poplar. *Anglis.*

It occurs sometimes in the lowlands near gentlemen's houses, and in plantations, but is a doubtful native. h. IV.

The bark is smooth and white. The leaves are roundish in the young trees, in the adult ones angular, divided into three, five or seven lobes, of a firm texture, a dark green or blackish colour above, white and cottony underneath; the footstalks are cottony, and both these and the serratures of the leaves are destitute of glands. The catkins are cylindrical.

It is a tree of so quick a growth that in some situations it will attain to full maturity in 20 years.

In low moist grounds it is esteemed a good tree to form avenues.

tremula 2.

POPULUS foliis subrotundis, dentato-angulatis, utrinque

utrinque glabris. *Sp. pl.* 1464. (*Ger. em.* 1487.
f. 3.)

The Asp, Aspen, or trembling Poplar. *Anglis.*

An Criothann. *Gaulis.*

It is frequent in moist woods, both in the highlands and lowlands. We observed also some dwarf plants of it in the western isles, as in *Rum* and *Mull*, &c. h. IV.

The bark of this tree is green and smooth. The leaves, at their first eruption, are hairy above, and cottony underneath, but, when full grown, are smooth, slightly heart-shap'd, or nearly round, with a few angular dents on the edges, and supported on long footstalks, which are compressed at the top, so that the leaves are perpetually trembling with every breath of wind. At the base of the young leaves are two united glands.

It is a tree of speedy growth. The bark of it is the favourite food of beavers, where those animals are found.

The wood is soft and white, very light and smooth.

It is used to make pannels or pack-saddles, wood canns, milk-pails, clogs, pattens, &c.

Horses, sheep, and other animals, will feed on the leaves.

The Highlanders entertain a superstitious notion, that our Saviour's cross was made of this tree, and for that reason suppose that the leaves of it can never rest.

POPULUS.

nigra * 3. **POPULUS** foliis deltoideis acuminatis ferratis.
Sp. pl. 1464. (*Ger. em.* 1486. f. 2. *Blackwell t.*
 248.)

Black Poplar. *Anglis.*

It is a doubtful native, but often seen in the low-lands near gentlemen's houses, in avenues and plantations. 5. IV.

On the banks of rivers, and in moist situations, it grows up to a tall tree, throwing out numberless suckers from the roots. The bark is ash-colour'd; the leaves are smooth, heart-shaped and acuminate, ferrated on the edges, but have no indenture at the insertion of the footstalk; their serratures are glandular on the inside, their footstalks long and yellowish.

It is a tree of quick growth, the trunk naked and lofty, the head regular and beautiful. The wood is light and soft, sometimes used by turners. The buds yield a yellow resinous unguent, formerly used as an emollient and soporific, but is now out of practice.

The indigent inhabitants of *Camtschatka* are sometimes reduced to the necessity of converting the inner bark into bread.

Of the cotton down of the seeds paper has been made.

The roots have been observed to dissolve into a kind of gelatinous substance, and to be coated with a tubular crustaceous spar, called by naturalists
Osteocolla,

Osteocolla, formerly much esteemed for bringing on a *Callus* in fractured bones.

RHODIOLA. *Gen. pl.* 1124.

MAS. *Cal.* 4-partitus. *Cor.* 4-petala.

FEM. *Cal.* 4-partitus. *Cor.* nulla. *Neetaria* 4.

Pist. 4. *Caps.* 4, polyspermæ.

rosea 1.

RHODIOLA. *Sp. pl.* 1465. (*Ger. em* 532. *Pet.*

herb. t. 42. *f.* 2. *Moris. hist. f.* 12. *t.* 10. *f.* 8.

Oed. Dan. t. 183. *opt.*)

Rose-root, Rosewort. *Anglis.*

Lus-nan-laogh. *Gaulis.*

Upon the rocks at the summits of almost all the Highland Alps, and very frequently by the sea-side, upon bold rocky shores, as in *Isla*, near *Sunderland*, and at *Sanick-Cave* abundantly, and upon the rocky shores of *Jona* and *Rum*, &c.

4. VI.

The root is thick, succulent, horizontally branched, and when bruised or dried, has a rose-like smell.

The stalk is eight or ten inches high, erect, simple, and unbranched, irregularly beset with smooth, wedge-shap'd, succulent, glaucous leaves, with purple summits, serrated toward the extremity, and acuminate. The flowers are small and yellow, and grow in crowded umbels at the tops of the stalks. The male flowers are sometimes furnished with the rudiments of the female sex, but the capsules of these are generally barren

barren. The number of *stamina* and styles in the two sexes is uncertain; the *stamina* vary from six to ten, the styles from three to six. At the base of the *germina* are placed four yellow heart-shap'd *nectaria*, erect, compressed, and shorter than the *calyx*. In a natural classification this plant would be rank'd amongst the *Sedums*, but an artificial method, for the ease of a student, required a separation.

The inhabitants of the *Farro* islands use this plant as a remedy for the scurvy. A cataplasm of the fresh roots apply'd to the forehead, is said to relieve the head-ach, and to heal malignant ulcers.

The inhabitants of *Greenland* eat it as garden-stuff. A fragrant kind of rose-water is capable of being distilled from the roots.

ENNEANDRIA.

MERCURIALIS. *Gen. pl.* 1125.

MAS. *Cal.* 3-partitus. *Cor.* 0. *Stam.* 9-s. 12. *Antheræ* globosæ, didymæ.

FEM. *Cal.* 3-partitus. *Cor.* 0. *Styli*, 2. *Caps.* dicocca, 2 locularis, 1-sperma.

perennis 1. MERCURIALIS caule simplicissimo, foliis scabris. *Sp. pl.* 1465. (*Ger. em.* 333. f. 1. *Pet. herb.* t. 1. f. 5 & 6. *Moris. hist.* f. 5. t. 34. f. 3 & 4. *ordinis superioris.* *Oed. Dan.* t. 400. opt.)

Dog's Mercury. *Anglis.*

In

In woods and shady places not unfrequent, both in the highlands and lowlands. 4. V.

The stalk is a foot high, erect, rough, and unbranched. The leaves are oval-lanceolate, serrated, rough, patent, and opposite. The flowers are green, and grow in thin slender spikes out of the alæ of the leaves. The furrows of the *germen* receive each a barren filament, terminated with a gland, marked with two brown dots.

This plant is of a soporific deleterious nature, noxious both to man and beast. There are instances of those who have eaten it by mistake, instead of *Chenopodium Bonus Henricus*, or *English mercury*, and have thereby slept their last sleep.

It is called, in the isle of Skye, *Lus-glen-Bracadale*, and I was informed that it is there sometimes taken by way of infusion to bring on a salivation. How well it answers the intention I know not, but the experiment seems to be dangerous.

annua 2. **MERCURIALIS** caule brachiato, foliis glabris, floribus spicatis. *Sp. pl.* 1465. (*Ger. em.* 332. f. 1 & 2. *Pet. herb. t.* 1. f. 7 & 8. *Moris. hist. f.* 5. t. 34. f. 1 & 2. *ordinis superioris. Blackwell. t.* 162.)

Annual Mercury. *Anglis.*

In waste places about towns and villages, but not common. We observed it at *Burntisland*, on the coast of *Fife*. ☉. IX.

The

The annual root, branched stalk, succulent habit, smooth leaves, and time of flowering, will readily distinguish this from the preceding. To which may be added, that the furrows of the *germen* in this have none of those barren filaments which are found in the foregoing.

Fournesfort informs us that the *French* make a syrup of the juice of this plant, two ounces of which is given for a purge; and that they use it in clysters and pessaries, mixing one quantity of honey to one and a half of the juice. In *England* it is out of use.

HYDROCHARIS. *Gen. pl.* 1126.

MAS. *Spatha* 2-phylla. *Cal.* 3-fidus. *Cor.* 3-petala. *Filamenta* 3 interiora stylifera.

FEM. *Cal.* 3-fidus. *Cor.* 3-petala. *Styli* 6. *Caps.* 6-locularis, polysperma, infera.

Morsus. HYDROCHARIS. *Sp. pl.* 1466. (*Ger. em.* 818.

ranae. 1. *Pet. herb. t.* 71. *f.* 2.)

Frog-bit. *Anglis.*

In ditches and slow-flowing waters, but rare. *Sibbald.* We found not this ourselves. 4. VII.

The leaves float upon the water, and are kidney-shaped, or nearly orbicular, with an indenture at the insertion of the footstalk; they are not much larger than a shilling, and are of a tough coriaceous substance. The male flowers arise commonly three from each *Spatha*, supported on long

long footstalks. The female ones arise singly, without a *Spatha*. The petals are three, white, with yellow *ungues*, round, and of a thin delicate texture. The *stamina* are nine, disposed in three series; six of them are shorter than the others, and curved outwardly; the remaining three have each a setaceous subulate appendage arising from its base, resembling a style. The styles are six. The capsule is coriaceous, round, and has six cells, containing numerous, small, roundish seed.

The plant increases by runners, furnished with pendulous gems, supported on long footstalks. These gems consist of two stipulaceous scales, folded together, within which are curiously envelop'd the embryo leaves of the future plant.

MONADELPHIA.

JUNIPERUS. *Gen. pl.* 1134.

MAS. *Amenti*. calyx squamæ. *Cor.* 0. *Stam.* 3.

FEM. *Cal.* 3-partitus. *Petala* 3. *Styli* 3. *Bacca* 3-sperma, tribus tuberculis calycis inæqualis.

communis 1. JUNIPERUS foliis ternis patentibus mucronatis, bacca longioribus. *Sp. pl.* 1470. (*Ger. em.* 1372. f. 1. *Blackwell. t.* 184.)

The common Juniper. *Anglis.*

An-t' aiteal. *Gaulis.*

In woods and heaths, and on the sides of mountains frequent. *h. V.*

This

DIOECIA MONADELPHIA.

This evergreen shrub is very various in its growth: sometimes it is erect, regular, and conical; at other times diffuse, irregular, and often decumbent or prostrate. The leaves grow verticillate, three in a whirl, and are lanceolate, acute, stiff, patent, sessile, convex on the upper side, the edges contracted, and concave and glaucous underneath. The male catkins are oval, and sessile in the bosoms of the leaves. The berries are biennial, green the first year, and of a dark blue at the end of the second year, when ripe.

β. There is a prostrate and very dwarfish variety, which frequently occurs upon the Highland mountams, having broader and thicker leaves, and berries longer, or more oval than sphærical. This is the *Juniperus Alpina*. *Clus. hist. p. 38.* & *Juniperus alpina minor*. *Ger. em. 1372. f. 3.*

Dwarf alpine Juniper. *Anglis.*

The whole plant has a strong aromatic smell. The wood, when burnt, emits a fragrant odor, like incense. It is of a reddish colour, very hard and durable; and, when large enough, is used in marquetry and vaneering, and in making cups, cabinets, &c. From the clefts of the bark, in warm climates, there sometimes exsudes a resinous gum, called by the *Arabs*, *Sandaracha*, which is used in varnishing.

The

The berries are spicy and stomachic, and are much esteemed in medicine as powerful attenuants, diuretics, and carminatives. They dissolve viscid humours in the first passages, are very beneficial in flatulencies, and in gravelly and nephritic complaints.

It may be given in the form of a rob, or the essential oil, or the infusion by way of tea.

The berries chew'd, or the essential oil taken only in a few drops, give the urine the same sweet violet scent which it has after taking turpentine.

A distill'd spirituous water of juniper-berries was used to be kept in the shops, but the vulgar esteeming it a pleasant dram, the making of it became the business of the distiller, who sold it under the name of *Geneva*:

“ The true geneva, or gin, is a malt-spirit, distill'd
“ a second time, with the addition of juniper-
“ berries. Originally the berries were added to
“ the malt in the grinding, so that the spirit
“ thus obtained was flavoured with the berries
“ from first, and exceeded all that could be
“ made by any other method. But at present
“ they leave out the berries entirely, and give
“ their spirits a flavour by distilling them with a
“ proper quantity of oil of turpentine; which,
“ tho' it nearly resembles the flavour of juniper-
“ berries, has none of their valuable virtues.”

In *Carniola*, and some parts of *France*, the inhabitants make a wine of the berries, steep'd in water.

In *Germany* they are bruised, and put into the sauce made use of for a wild boar, and are frequently eaten also with other pork, to give it the wild-boar flavour.

Thrushes and grouse feed on them, and disseminate the seed in their dung.

TAXUS. *Gen. pl.* 1135.

MAS. *Cal.* 3-phyllus gemmæ. *Cor.* 0. *Stamina* multa. *Antheræ* peltatæ 8-fidæ.

FEM. *Cal.* 3-phyllus gemmæ. *Cor.* 0. *Stylus* 0. *Sem.* 1, calyculo baccato, integerrimo.

baccata 1. TAXUS foliis approximatis. *Sp. pl.* 1472. (*Ger. em.* 1370.)

The Yew-Tree. *Anglis.*

An t iuchar. *Gaulis.*

It is found here and there in the Highlands, in a truly wild state. At *Glenure*, near *Glen-Creran*, in *Upper-Lorn*, are the remains of an old wood of it. The place takes its name from the trees which grow in it, for *Glenure*, in the *Gaulic* language, is no other than a corruption of *Glean-iuir*, i. e. The valley of yew-trees. h. III.

It

It is an evergreen tree, of no great height. but the trunk grows to a large size. My ingenious friend, Mr. *Pennant*, in his *Scotch* Tour, has taken notice of a very remarkable decay'd one in *Fortingal* church-yard, whose remains measured fifty-six feet and a half in circumference.

The leaves are of a dark shining green, linear and acute, divided by a longitudinal nerve, and grow in a double series, opposed to each other, on the same plane. The flowers, both male and female, grow from the axæ of the leaves. The berry is red, and mucilaginous, of a singular structure, being formed out of the receptacle, which swells and becomes succulent, but does not cover the top of the seed. It has a sweet, mawkish taste.

The wood is red and vein'd, very hard and smooth, and much used by turners and cabinet-makers.

The tree is very patient of the sheers, and will assume almost any figure.

It has generally been supposed to have a poisonous quality. We have repeated accounts of horses and cows that have died by eating it; but whether the yew was the immediate cause of their death, is a matter of some doubt.

The berries are certainly not poisonous.

Our ancestors esteem'd the wood of this tree as superior to any other for making bows. For this

intent it was planted in almost every church-yard, for the convenience and ready use of the several parishioners.

The leaves are of a dark shining green, linear and grow in a double series, opposite to each other, on the stem. The flowers, both male and female, grow from the axils of the leaves. The berry is red, and more or less of a triangular shape, being formed out of the receptacle, which is fleshy and becomes succulent, but does not cover the top of the seed. It has a sweet, manna-like taste.

The wood is red and very hard and smooth, and is much used by carpenters and cabinet-makers.

The tree is very productive of the berries, and will at times shoot any height.

It has generally been supposed to have a poisonous quality. We have reported accounts of horses and cows that have died by eating it; but when the tree was the immediate cause of their death, as a matter of some doubt.

The berries are certainly not poisonous.

Our authors observed the wood of this tree as in-
teresting to any other for making bows. For this

CLASSIS

CLASSIS XXIII.

POLYGAMIA

MONOECIA.

HOLCUS. ♀. *Glum.* 1-flora. *Glum.* 2-valvis.
Stam. 3. *Styl.* 2. *Sem.* 1.

♂. *Glum.* 1-flora. *Glum.* 2-valvis.
Stam. 3.

ÆGILOPS. ♀. *Glum.* 3 flora. *Glum.* 3-arist. *Stam.*
 3. *Styl.* 2. *Sem.* 1.

♂. *Glum.* 3-flora. *Glum.* 3-arist. *Stam.*
 3.

VALANTIA. ♀. *Cal.* nullus. *Cor.* 4-partita.
Stam. 4. *Styl.* 2-fid. *Sem.* 1.

♂. *Cal.* nullus. *Cor.* 3-s. 4-partita.
Styl. 3-s. 4.

ACER. ♀. *Cal.* 5-fidus. *Cor.* 5-petala. *Stam.* 8.
Styli 2. *Caps.* 2-cocca alata.

♂. *Cal.* 5-fidus. *Cor.* 5-petala. *Stam.* 8.

PARIETARIA. ♀. *Cal.* 4-fidus. *Cor.* nulla. *Stam.*
 4. *Styl.* 1. *Sem.* 1.

♀. *Cal.* 4-fidus. *Cor.* nulla. *Styl.*
 1. *Sem.* 1.

ATRIPLEX. ♀. *Cal.* 5-phyllus. *Cor.* nulla. *Stam.*
 5. *Styl.* 2-fidus. *Sem.* 1.

♀ *Cal.*

POLYGAMIA.

♂. Cal. 2-phyllus. Cor. nulla. Styl.
2-fid. Sem. 1.

DIOECIA.

FRAXINUS, ♂. Cal. o-s. 4-partita. Cor. o-s.
4-partita. Stam. 2. Pist. 1. Sem. 1.
♀. Cal. o-s. 4-partita. Cor. o-s.
4-partita. Pist. 1. Sem. 1.

* ILEX aquifolium.

MONOECIA.

M O N O E C I A.

HOLCUS. *Gen. pl.* 1146.HERMAPHRODIT. *Cal.* glum. 1-s 2-flora. *Cor.**Glum.* aristata. *Stam.* 3. *Styl.* 2. *Sem.* 1.MASC. *Cal.* *Glum.* 2-valvis. *Cor.* 0. *Stam.* 3.

mollis 1. HOLCUS glumis bifloris nudiusculis, flosculo her-
maphrodito mutico, masculo arista geniculata.
Sp. pl. 1485. (*Schreb. gram. t.* 20. *f.* 2. *opt.*
Scheuch. gram. 235. *t.* 4. *f.* 25. *flos.*)

Corn Soft-grass. *Anglis.*

It grows amongst corn, but not very frequent. 4.
VII.

This grass differs so very little from the following,
that it is doubtful whether it be any more than
a variety. It is smother, however, in all its
parts, the *calyces* are more acuminate, the
beards longer, and the place of growth different.

lanatus 2. HOLCUS glumis bifloris villosis, flosculo herma-
phrodito mutico, masculo arista recurva. *Sp. pl.*
1485. (*Scheuchz. Gram. p.* 234. *t.* 4. *f.* 24. *A. B.*
flores. *Loes. Pruss. p.* 111. *t.* 25. *bona.* *Schreb.*
gram. 145. *t.* 20. *f.* 1. *opt.*)

Meadow Soft Grass. *Anglis.*

In meadows, and moist shady places frequent. 4.

VI.

This grass grows in tufts, and is a cubit high. The
stalk, leaves, and glumes, are soft and downy.
The

The flowers grow in upright panicles, the glumes white, tinged with red. The flowers are smooth; the male has a short inflected beard.

This grass is esteem'd a good fodder for cattle.

In the isle of *Skye* it is sometimes used to make ropes for the fishing-boats, but is not so good for that purpose as the *Melica cærulea*. *Lin.*

ÆGILOPS. *Gen. pl.* 1150.

HERMAPHROD. *Cal.* gluma subtriflora, cartilaginea. *Cor.* gluma terminata triplici arista. *Stam.* 3. *Styl.* 2, *Sem.* 1.

MASC. *Cal. & Cor.* Gluma, ut in priore. *Stam.* 3. *incurvata* 1. ÆGILOPS spica subulata mutica lævi incurva, calycibus unifloris. *Sp. pl.* 1490. (*Moris. hist.* 182. *f.* 8. *t.* 2. *f.* 8. *Barrel. ic.* 5, 6.)

Sea Hard-grass. Incurv'd *Ægilops*. *Anglis.*

It grows upon the sea-shores, but not common. We saw some specimens gathered upon the coasts of *Scotland*, we were told at *Ardbigland*, in the county of *Galloway*. ☉. VII. VIII.

This grass is commonly about five inches high. Many reclining branched stalks arise from one root. The flowers grow in linear, rigid, incurved, jointed spikes, but little larger than the stalks themselves. At each joint of the spike is placed a single flower, the *calyx* of which consists of two equal acuminate glumes. The petals,
or

or glumes of the *corolla*, are two in number, thin acuminate, and about half the length of the *calyx*. None of the glumes in this species are bearded, neither is there any triflorous *calyx* to be found in it, according to the characters of the *genus*.

VALANTIA. *Gen. pl.* 1151.

HERMAPHROD. *Cal.* 0. *Cor.* 4-partita. *Stam.* 4. *Styl.* 2-fidus. *Sem.* 1.

MASC. *Cal.* 0. *Cor.* 3-s. 4-partita. *Stam.* 4-s. 3. *Pistillum* obsoletum.

cruciata 1. VALANTIA floribus masculis quadrifidis, pedunculis diphyllis *Sp. pl.* 1491. (*Ger. em.* 1123. f. 1. *Moris. hist. f.* 9. t. 21, f. 1. *Cruciata hirsuta. Pet. herb. t.* 30. f. 1. *Blackwel. t.* 76.)

Cross-wort, or Mugweed. *Anglis.*

In bushes, and by wood-fides, but not very common. In the king's park at *Edinburgh*. *Dr. Parsons.* 24. VI.

The stalks are square, at first weak and reclining, afterwards erect; this and the whole plant hairy. The leaves are oval and verticillate, four in a whirl; each leaf furnished with three nerves. The flowers are yellow, and grow out of the alæ of the leaves, on short branched peduncles, the males mixed with the hermaphrodites.

The plant, particularly the roots, will dye a red colour.

It

POLYGAMIA MONOECIA.

It has an astringent quality, and has been reckoned amongst the vulneraries, but is at present out of use.

PARIETARIA. *Gen. pl.* 1152.

HERMAPHROD. *Cal.* 4-fidus. *Cor.* o. *Stam.* 4. *Styl.* 1. *Sem.* 1, superum, elongatum.

FEM. *Cal.* 4-fidus. *Cor.* o. *Stam.* o. *Styl.* 1. *Sem.* 1, superum, elongatum.

officinalis 1. PARIETARIA foliis lanceolato-ovatis, pedunculis dichotomis, calycibus diphyllis. *Sp. pl.* 1492. (*Ger. em.* 331. *Moris. hist.* f. 5. t. 30. f. 1. *ordinis inferioris.* *Pet. herb.* t. 8. f. 10. *cum charactere.* *Blackwell. t.* 156. *Oed. Dan. t.* 521. *opt.*)

Pellitory of the Wall. *Anglis.*

In waste places, and upon walls, as upon the walls of the church at *Burntisland*, &c. 4. VII.

The root creeps: the stalk grows erect, and is rough to the touch, and adhesive. The leaves are alternate, elliptical, and lanceolate, vein'd, and a little rough. The flowers grow out of the axæ of the leaves, in sessile, branched, verticillate clusters, of a greenish colour, tinged with red. The *antheræ* have a great degree of sensibility, for if irritated with a point of a pin, they fly from the *calyx* with elastic force, and explode their powder. The female flowers are quadrangular, and pyramidal. The males are furnished with a sessile, shining, oblong, acuminate *nectarium*,

rium, but not the females. The hermaphrodites seem to be only spurious, as their *stamina* are imperfect.

It has a watery, nitrous, diuretic quality. Three ounces of the juice, taken internally, or an external fomentation, have been found very serviceable in the stranguary.

The plant laid upon heaps of corn infested with weevils, is said to drive away those destructive insects.

ATRIPLEX. *Gen. pl.* 1153.

HERMAPHROD. *Cal.* 5-phyllus. *Cor.* o. *Stam.* 5. *Stylus* 2-partitus. *Sem.* 1. depressum.

FEM. *Cal.* 2-phyllus. *Cor.* o. *Stam.* o. *Stylus* 2-partitus. *Sem.* 1, compressum.

ATRIPLEX caule fruticoso, foliis obovatis. *Sp. pl.* 1493. (*Ger. em.* 523. f. 3. *Pet. herb.* 1. 7. f. 7)
portulacoides L.
 Sea Purslane. *Anglis.*

Upon the sea-shores near high water mark, but not common. *Sibbald.* h. VIII.

This is a low shrub, varying in height from six inches to a yard. The branches generally recline, are angular, and of a whitish green. The leaves are glaucous, opposite, generally elliptical, some obtuse, others lanceolate, supported on footstalks, and entire on the edges. The flowers are yellow, and terminate the branches in clustered spikes.

ATRIPLEX.

laciniata 2. ATRIPLEX caule herbaceo, foliis deltoidibus dentatis, subtus argenteis. *Sp. pl.* 1494. (*Ger. em.* 325. f. 4. *Pet. herb. t.* 7. f. 3. *Moris. hist. f.* 5. t. 32. f. 17. *melior.*)

Frosted or Leprous Sea Orache. *Anglis.*

Upon the sea shores not uncommon. ☉. VIII.

The whole plant is of a grey hoary colour, the branches prostrate, or at least reclining. The leaves grow alternate, and are covered with a kind of silvery scales. They are not strictly deltoid or triangular, because the base, where the footstalk is inserted, is extended downwards. The edges have a few wide or distant dents. The hermaphrodite flowers grow at the summits of the stalks, in sessile clusters, intermixed with leaves. The females are axillary; the leaves of the *calyx* very large, nearly triangular, commonly with five dents on the edges, and generally beset with prominent tubercles on the sides near their base.

hastata 3. ATRIPLEX caule herbaceo, valvulis femineis magnis deltoidibus sinuatis. *Sp. pl.* 1494. (*Moris. hist. p.* 607. f. 5. t. 32. f. 14. *Pet. herb. t.* 7. f. 1. & 2.)

Delt Orach. *Anglis.*

In waste places about towns and villages, especially near the sea shores. ☉. VIII. IX.

The stalk is erect and angular. The leaves deltoid, or halbert-shap'd, with a few dents on the edges,

edges, covered with a hoary powder, especially on the under side, but not so white and silvery as the preceding. The flowers grow in short erect clusters at the top of the stalks. The female valves are triangular, whitish, a little rough on the sides, but not so large as in the foregoing.

patula 4. **ATRIPLEX** caule herbaceo patulo, foliis subdeltoideo-lanceolatis, calycibus seminum disco dentatis. *Sp. pl.* 1494. (*Ger. em.* 326. *f.* 7. *Moris. bist. p.* 607. *f.* 5. *t.* 32. *f.* 15. *Pet. herb. t.* 7. *f.* 5.)

Spreading Spear Orach. *Anglis.*

In cultivated grounds, and waste places frequent.

☉. VIII. IX.

The stalk is furrow'd, the branches long, and widely divaricated, almost at right angles with the stalk, and often depressed to the ground. The leaves are succulent, green, slightly sprinkled with a mealy powder underneath; the lower ones hastate, but one of the auricles often wanting; the upper ones entire and linear-lanceolate. The flowers grow in erect, slender spikes; the males are generally quadrifid, and have only four *stamina*; the valves of the females are dented, and have their sides commonly a little rough and tuberculous.

marina 5. **ATRIPLEX** caule herbaceo erecto, foliis linearibus serratis. *Lin. Mantiss. p.* 300. *A. serrata.* *Huds.*

POLYGAMIA MONOECIA.

Huds. Flor. Ang. p. 377. (Moris. hist. f. 5. t. 32. f. 16. Pet. herb. t. 7. f. 4.)

Serrated Sea Orach. *Anglis.*

By the sea side in waste places near towns and villages. *Dr. Parsons. O. VIII. IX.*

This grows erect and branched, about eight or ten inches high. The leaves are long, and nearly linear, with eight or ten dents or jags on the edges, and a slight mealiness on the under sides. The flowers grow in clustered spikes at the tops of the branches, hermaphrodites and females intermixed.

littoralis 6. ATRIPLEX caule herbaceo erecto, foliis omnibus linearibus integerrimis. *Sp. pl. 1494. (Moris. hist. f. 5. t. 32. f. 20. mala. Pet. herb. t. 7. f. 6. melior.)*

Grass-leav'd Sea Orach. *Anglis.*

On the sea-side near towns and villages, as about *Dysart* dock, on the coast of *Fife*, &c. *O. VIII. IX.*

This grows erect, about a foot high, and is readily distinguished by its narrow, linear, entire leaves.

The young leaves of this genus are eatable, like those of the *Chenopodia*.

ACER. *Gen. pl. 1155.*

HERMAPHROD. *Cal. 5-fidus. Cor. 5-petala.*

Stam. 8. Pist. 1. Caps. 2-3.

3, mono-

3, monospermæ, ala terminatæ.

MASC. Cal. 5-fidus. Cor. 5-petala. Stamina 8.

pseudo-platanus 1.

ACER foliis quinquelobis inæqualiter ferratis, floribus racemosis. *Sp. pl.* 1495. (*Ger. em.* 1484. f. 1. *Du Hamel. arb.* 1. t. 36. f. 1.)

The Great Maple, or Bastard Sycomore. *Anglis.*

Plinntrinn. Gaulis. The Plane-Tree. *Scotis.*

Near houses, and in gentlemen's plantations frequent, but scarcely indigenous. *h. V. VI.*

This grows up to a large and lofty tree. The wood is white and vein'd, the leaves divided into five lobes, the middle one largest; the edges notched with sharp ferratures, alternately greater and smaller; the under sides nervous, of a pale green, and sometimes a little downy. The flowers are of a pale green, and grow in thick cluster'd pendulous spikes. The capsules grow in pairs, united at their base, and terminated each with a broad membranaceous wing.

The wood is soft, and used by turners for making bowls, trenchers, and other utensils. The knots are beautifully vein'd, and desired by the cabinet maker.

The tree itself is very ornamental in avenues, affording an agreeable shade.

By tapping it yields a liquor not unlike that of the birch-tree, from which the *Americans* make a sugar, and the *Highlanders* sometimes an agreeable and wholesome wine.

ACER

campestre 2. ACER foliis lobatis obtusis emarginatis. *Sp. pl.*
1497. (*Ger. em.* 1484. f. 2.)

Common Maple. *Anglis.*

In woods, but not very common. We saw it at
Ardmaddy, in *Nether-Lorn*, and *Sibbald*, at *Rin-*
fawns, near *Pertb.* h. V. VI.

It grows up to a low tree, about twelve or fifteen
feet high. The bark is rough, and full of deep
fissures. The leaves grow in pairs, on long foot-
stalks. They are divided about half-way down
into three lobes, the latter ones again subdivided
into two lesser ones, and the middle one into
three, all of them obtuse. The flowers are
greenish, and grow at the summits of the
branches in thin loose clusters. The young pe-
duncles, when broken off, are lactescent. The
receptacle of the flower is spongy, and divided
into eight rays, between each of which is placed
a *stamen*. The seeds are like those of the pre-
ceding.

The wood is used by turners for the same purposes
as the foregoing, and sometimes for making
gun-stocks.

D I O E C I A.

FRAXINUS. *Gen. pl.* 1160.

HERMAPHROD. *Cal.* o-s. 4-partitus. *Cor.* o-s.
4-petala. *Stam.* 2. *Pist.* 1.
Sem. 1. lanceolatum.

FEM.

FEM. *Pist.* 1, lanceolatum.

excelsior 1. FRAXINUS foliolis ferratis, floribus apetalis. *Sp.*
pl. 1509. (*Ger. em.* 1472. *Blackwell t.* 328.)

The Ash-Tree. *Anglis.*

Uinsionn. *Gaulis.*

In woods and hedges frequent. $\frac{1}{2}$. IV.

This, if not lopped, grows up to a lofty tree, and is speedy of growth. The bark is smooth and whitish. The wood is white, smooth, hard and tough. The leaves are pinnated with about six pair of oval-lanceolate, ferrated *pinnæ*, with an odd one at the end. They come out late in the Spring, and fall off early in the Autumn. The flowers are produced in branched clusters from lateral gems, and have neither *Calyx* or petals, the seed is elliptical, compress'd, and pendulous.

The wood is much used by the wheel-wright for plough-boot and cart-boot, and by the cooper for hoops. Horses and sheep are fond of the leaves. The bark and seeds are reckoned a diuretic.

In warm climates a kind of sweet gum, call'd manna, distils from this tree, two ounces of which is a gentle cathartic.

It is a hardy tree, that endures well the sea-winds, and may therefore be planted upon the shores where few others will grow.

In many parts of the highlands, at the birth of a child, the nurse or midwife, from what motive I know not, puts one end of a green stick of this tree into the fire, and, while it is burning, receives into a spoon the sap or juice which oozes out at the other end, and administers this as the first spoonful of liquor to the new-born babe.

CLASSIS

CLASSIS XXIV.

CRYPTOGAMIA

FILICES.

* *Frustrificationes spicatae.*

EQUISETUM. *Spica* sparsa. Frustrificationes
peltatae; basi valvulatae.

OPHIOGLOSSUM. *Spica* articulata. Frustrific.
circumscissae.

OSMUNDA. *Spica* racemosa. Frustrif. 2-valves.

** *Frustrificationes frondosae, in pagina inferiore.*

ACROSTICHUM. *Macula* Discum totum occu-
pans.

POLYPODIUM. *Puncta* Disci distincta.

ASPLENIUM. *Lineae* Disci subparallelae, variae.

PTERIS. *Lineae* marginis ad peripheriam.

ADIANTUM. *Maculae* apicum margine reflexo
obtectae

TRICHOMANES. *Fr.* solitariae margini ipsi in-
fertae.

*** *Frustrificationes radicales.*

PILULARIA. Frustrificationes 4-loculares.

ISOETES. Frustrificationes 2-loculares.

CRYPTOGAMIA.

M U S C I.

* *Acalyptrati.*LYCOPODIUM. *Anthera* 2-valvis, sessilis.SPHAGNUM. *Anthera* ore lævi.PHASCUM. *Anthera* ore ciliato.** *Calypttrati diclini.*SPLACHNUM. *Anthera* cum Apophysi maxima.POLYTRICHUM. *Anth.* cum Apophysi minima, marginata.MNIUM. *Anth.* sine Apophysi.*** *Calypttrati monoclini.*BRYUM. *Anthera* pedunculo terminali e tuberculo.HYPNUM. *Anthera* pedunculo laterali e perichætio.FONTINALIS. *Anthera* sessilis, Perichætio imbricato obvoluta.

A L G Æ.

* *Terrestres.*MARCHANTIA. *Fl.* calyce communi peltato, subtus florido.JUNGERMANNIA. *Fl.* calyce simplici, 4-valvi.TARGIONIA. *Fl.* calyce bivalvi.RICCIA. *Fruet.* Granulis frondi innatis.LICHEN. *Fruet.* receptaculo lævi nitido.

BYSSUS. Substantia lanuginosa.

* *Tremella.*

CRYPTOGAMIA.

645

* *Tremella.*

** *Aquatica.*

TREMELLA. A. gelatinosa.

ULVA. A. membranacea.

FUCUS A. coriacea.

CONFERVA. A. capillaris.

F U N G I.

* *Pileati.*

AGARICUS. Pileus subtus lamellosus.

BOLETUS. Pileus subtus porosus.

HYDNUM. Pileus subtus echinatus.

PHALLUS. Pileus subtus lævis.

** *Pileo destituti.*

HELVELLA. F. turbinatus.

PEZIZA. F. campanulatus.

CLAVARIA. F. oblongus.

LYCOPERDON. F. globosus.

MUCOR. F. vesicularis stipitatus.

CLASSIS

CRYPTOGAMIA FILICES.

CLASSIS XXIV.

CRYPTOGAMIA

FILICES.

EQUISETUM. *Gen. pl.* 1169.*Spica* fructificationibus peltatis, basi dehiscentibus multivalvi.*Sylvaticum*: EQUISETUM caule spicato, frondibus compositis. *Sp. pl.* 1516. (*Ger. em.* 1114. f. 5)Wood Horse-tail. *Anglis.*In woods and moist shady places. Just by the hermitage near *Edinburgh*. *Dr. Parsons.* At *Malnan-tarmonach* in *Breadalbane*. *Mr. Stuart.* 4. V.

The stalk is from a foot to a cubit high, angular, and rough to the touch, the angles being edged with short *spinulae*, scarcely visible without a microscope. The joints are sheathed with large, yellowish, membranaceous, lax *vaginae*, which are divided commonly into three or four deep triangular dents. At the base of these *vaginae* there coalesce generally twelve green, acute dents. The leaves grow verticillate, twelve or more in a whirl. The whirls are about an inch distant from each other. The leaves are very slender, nearly quadrangular, about five inches long, pendent, and beset with several other secondary whirls, so that it resembles a pine-tree in

in miniature. The stalk in its infancy is terminated with a spike of *cryptogamous* flowers.

arvense 2. **EQUISETUM** scapo fructificante nudo, sterili frondoso. *Sp. pl.* 1516. (*Ger. em.* 1114. *f.* 3. *Blackwell t.* 217.)

Common or Corn Horse-tail. *Anglis.*

Earbull eich. *Gaulis.*

In wet meadows and corn-fields frequent. 2. V.

The flowering stalks are naked, and distinct from the foliaceous ones, and appear in the Spring somewhat like the young shoots of asparagus, and soon decay. The barren stalks appear soon afterwards, and are ten or twelve inches high, durable, and rough to the touch. The leaves grow verticillate, from seven to twelve or more in a whirl, generally simple and undivided, but sometimes emitting a branch or two, frequently jointed, the *vaginæ* divided into numerous, pointed, fuscous dents. The powder out of the spikes, when placed under the microscope, may be seen to leap about with great elasticity, as if alive.

It has a very astringent and diuretic quality, and is esteem'd serviceable in the *Hæmaturia* and *Gonorrhæa*, but is out of the present practice.

It is a troublesome plant in pastures, and disagreeable to cows, never touch'd by them unless compell'd by hunger, and then bringing upon them an incurable *Diarrhæa*. It does not seem to affect horses or sheep.

EQUISETUM.

palustre 3. **EQUISETUM** caule angulato, frondibus simplicibus. *Sp. pl.* 1516. (*Ger. em.* 1114. f. 4)

Marsh Horse-tail. *Anglis.* Paddock-pipe. *Scotis.*

In ditches and wet soils frequent. 4. VI.

The stalk is about a cubit high, nearly smooth, and channelled with five or six deep furrows.

The *vaginæ* at the joints of the stalk are divided into seven or eight acute, black dents, with white edges. The leaves are simple and unbranched, nearly erect, and grow about eight in a whirl. The spikes of flowers terminate the stalks, and are black before they disperse their *Pollen*.

β. A variety of this sometimes occurs, in which the leaves or branches which compose the whirls are many of them terminated with small black oval spikes, as figured in *Ray's Synops.* 131. t. 5. f. 3.

This is not so rough as the preceding, but is also prejudicial to cattle.

limosum 4. **EQUISETUM** caule subnudo lævi. *Sp. pl.* 1517. (*Ray's Synops.* p. 131. t. 5. f. 2.)

Smooth naked Horse-tail. *Anglis.*

In lakes and ditches frequent. 4. V. VI.

This grows three or four feet high, and is often quite destitute of leaves, but sometimes produces here one or two straggling ones. The stalk is smooth, channelled with twelve or more furrows,

EQUISETUM.

furrows, and terminated with a black oval spike. The dents of the *vaginæ* are acute and black, and of the same number with the furrows.

Haller is of opinion that this is no other than a variety of the foregoing.

fluviatile 5 **EQUISETUM** caule striato, frondibus subsimplicibus. *Sp. pl.* 1517. (*Ger. em.* 1113. f. 1. *Blackwel t.* 217)

Great River Horse-tail. *Anglis.*

Ear-bull-eich. *Gaulis.*

In shady marshes, and on the brinks of stagnant waters. 4. V.

This is the largest of all the *British* species of this genus. The stalk is a yard high, and sometimes near an inch in diameter, of a pale or whitish colour at first, but blackish in decay, soft, hollow, and divided into numerous joints. The leaves are nearly quadrangular, generally simple, undivided, and grow commonly from 24 to 30 in a whirl, and in some luxuriant specimens even 40. The *vaginæ* are striated, and divided into as many long, linear dents as there are leaves in the whirl. The spikes of fructification grow on naked stalks, distinct from the foliaceous ones, but from the same root, and are replete with a bluish powder.

Haller tells us that this kind of *Equisetum* was eaten by the *Romans*, and *Linnaeus* affirms that oxen

oxen and rhein-deer are fond of it, but that horses refuse it.

byemale 6. **EQUISETUM** caule nudo scabro basi subramoso.

Sp. pl. 1517. (*Ger. em.* 1113. *f.* 2.)

Rough Horse-tail. Shave-grass. Dutch Rushes.

Anglis.

By the sides of rivers, and in wet, marshy woods, but rare. *Dr. Parsons.* It was not our fortune to find it in *Scotland*, but it grows plentifully in *Northumberland*, on the banks of *North-Tyne*, near *Nunnick* and *Chipchace*. 4. VII.

The stalks of this kind are evergreen, about a cubit high, naked, and unbranched for the most part, but sometimes emitting two or three lateral branches near the base. They are furrow'd with 18 or 20 rough, obtuse angles, are fistular, and distantly jointed, the joints many of them being three inches asunder. The *vaginae* are black at the base and the margin, and obsoletely dented with as many short obtuse dents as the stalk has furrows,

The spike terminates the stalk, and the *vagina*, which immediately subtends it, is pale at the base, but black at the margin, distinctly and acutely dented.

All the species of horsetail will in some degree answer the purposes of polishing woods and metals, but this is the best and most desirable of any, as being the hardest and roughest. It is much

much used by the whitesmiths and cabinet-makers, under the name of *Dutch* rushes.

In *Northumberland* the dairy-maids scour and clean their milk-pails with it,

Some entertain an opinion that if cows chance to feed upon it, their teeth will drop out. How true this may be I know not, but I am persuaded that the pasture must be very bad where they are compelled to eat such food.

OPHIOGLOSSUM. *Gen. pl.* 1171.

Spica articulata, disticha; articulis transversim dehiscantibus.

vulgatum 1 OPHIOGLOSSUM fronde ovato. *Sp. pl.* 1518.
(*Ger. em.* 404. *f.* 1, 2. *Moris. hist. f.* 14. *t.* 5, *figuræ imæ.* *Blackwell t.* 416. *Oed. Dan. t.* 147. *opt.*)

Adder's Tongue. *Anglis.*

In meadows and moist pastures, but not very common, as about *Dunfinnane* hill, in *Gourie*, &c.
4. V.

The root is fibrous, the stalk varies in height from a finger's length to a span or more, and is terminated with a green, distichous, jointed tongue-shap'd spike, subtended by a single, long-oval, succulent nerveless, smooth leaf, which embraces the stalk with its base. The joints or articulations burst transversely when ripe, and throw out numerous roundish seeds as small as dust.

Many

Many of the stalks are barren, producing a leaf only without a spike.

Others, sometimes, but very rarely, vary with a double or treble spike.

The common people sometimes make an ointment of the fresh leaves, and use it as a vulnerary to green wounds, which is a very ancient application, recommended by *Matthiolum*, *Tragus*, and others.

OSMUNDA. *Gen. pl.* 1172.

Spica ramosa, fructificationibus globosis.

* *Scapis insidentibus cauli ad Basin frondis.*

lunaria 1. OSMUNDA scapo caulino solitario, fronde pinata solitaria. *Sp. pl.* 1519. (*Ger. em.* 405. f. 2. *Blackwell t.* 420. *Moris. hist. f.* 14. t. 5. f. 1, 2, 3, 26. *Oed. Dan. t.* 18, opt.)

Moon-wort. *Anglis.*

In mountainous pastures amongst fine short grass, but not very common. *Sibbald* observed it on *Ardgath-hill*, to the North of *Linlithgow*. We saw it on dry rocky pastures near *Dundonald's*, about two miles from *Little-Loch-Broom*, on the Western coast of *Ross-shire*, and on a brae between *Great* and *Little Breeze-hill*, a mile from *Taliskar*, in the isle of *Skye*, &c. 4. V. VI.

The root is fibrous, the floral stalk three or four inches high, terminated with a naked, branched spike, the branches leaning one way, to which are affixed two rows of globular capsules, green

at

at first, but yellow when ripe, and bursting vertically from the top to the base. These capsules are divided by an annular zone, and contain numerous, oval, dust-like seeds. Below the base of the spike is affixed to the stalk a pinnated leaf, consisting of thick, succulent fan-shap'd *pinnæ*, from three to eight pairs, with an odd one at the end.

β. It varies sometimes with a leaf more or less compounded, or doubly pinnated, as may be seen in the figures above referred to.

It has a vulnerary quality like the preceding.

*** *Fronde ipsa fructificationes ferente.*

regalis 2. OSMUNDA frondibus bipinnatis apice racemiferis. *Sp. pl.* 1521. *Ger. em.* 1131. *Moris. hist. f.* 14. *t.* 4. *f.* 1. *ordinis infimi.* *Oed. Dan. t.* 217. *opt.*)

Flowering Fern, or Osmund Koyal. *Anglis.*

Royal Brachens. *Scotis.*

It grows in bogs, on the borders of lakes, and out of rocks by the sea-side in many places. We observed it in the following: At *Comstraden*, by the side of *Loch-Lomond*; in the isle of *Bute*, near *Mr. Stuart*; in *Arran*, out of the rocks by the sea side going from *Corry* to *Brodrick* castle, and out of the rocks at the caves of *Dumma-
doon*; in *Isle*, by the sides of *Loch-Guira*, abundantly; in *Colonsa* and *Mull*, &c. *Sibbald* also
observed

observed plenty of it in *Haining* wood, in *Sterlingshire*, 4. VII. VIII.

The root is thick, externally fibrous, and covered with thin brown scales. The *Frons*, or leaf, is a yard high, doubly pinnated, the *pinnulae* varying from six to ten pair, with an odd one at the end, each about two inches long, lanceolate and entire, divided by a middle rib, from both sides of which arise numerous fine bifid and dichotomous nerves, their ramifications capillary and parallel. The central leaves are terminated with a doubly pinnate branch of fructifications; the *pinnulae* awl-shap'd, and crowded with sessile clusters of globular capsules, green when young, yellowish brown when ripe, and bursting vertically; the external leaves are barren.

This is the largest and most specious of all the *British* ferns.

*** *Frondibus aliis foliaceis, aliis fructificantibus.*

Spicant 3. | OSMUNDA frondibus lanceolatis pinnatifidis, laciniis confluentibus integerrimis parallelis. *Sp. pl.* 1522. (*Ger. em.* 1140. *f.* 2. *Moris. hist. f.* 14. *t.* 2, *f.* 23. *Oed. Dan. t.* 99. *opt.*)

Rough Spleen-wort. *Anglis.*

In woods and heaths. 4. VII. VIII.

The leaves are of a long elliptic-lanceolate form, pinnatifid, and grow in a circle reclining towards the ground. The exterior ones are perennial and barren,

barren, the central ones annual and fertile. The segments, or *pinnae*, are numerous, lanceolate and entire, curved a little upwards, longest in the middle of the leaf, and shorter by degrees towards the top and the base. The floral leaves are erect and long, the middle rib of a dark red, the *pinnae* much narrower; all of them fertile, and the fructifications disposed on the under sides, in two longitudinal parallel lines, at first of a yellow colour, but brown when ripe, and then covering the whole disk.

crispa 4.

OSMUNDA frondibus supradecompositis, pinnis alternis subrotundis incis. *Sp. pl.* 1522. (*Pluk. t. 3. f. 2. Moris. hist. 3. p. 593. f. 14. t. 4. f. 4. Oed. Dan. t. 496*)

Crisped Fern. Parsley Fern. *Anglis.*

Amongst the rocks and stones upon the highland mountains. *Mr. Stuart.* We observed it upon the top of *Ben-na-Caillich*, in the parish of *Christ-Church*, in the isle of *Skye*. u. VIII.

The exterior leaves are barren, smooth, and trebly pinnate; the extreme *pinnulae* of an obtuse rhomboidal figure, plain, and dented on the edges. The central ones are fertile, trebly pinnate, the exterior *pinnulae* oval, convex, pedunculate, their edges contracted, and the under sides covered with yellow dust-like fructifications.

ACROS:

ACROSTICHUM. Gen. pl. 1173.

Frustrificationes discum totum frondis tegentes.* *Fronde simplici divisa.*septentrio-
nale 1.

ACROSTICHUM frondibus nudis linearibus laciniatis. Sp. pl. 1524. (Ger. em. 1561. f. 8. Oed. Dan. t. 60. opt.)

Forked Fern. *Anglis.*This grows out of the clefts of the rocks about *Arthur's Seat*, at *Edinburgh*. 4. VII.

It grows in tufts, resembling at first sight some rushy grass. The leaves vary in height from one to three or four inches. They are commonly a little curved, narrow, linear, and entire at the base, but dilated towards the extremity, and divided into two or three lanceolate forks or segments, which are again irregularly cut into two, three, or more lesser recurved ones. The fructifications make their first appearance on the under side of these segments in small lines, like as in the *Asplenium Ruta muraria*, to which it is nearly allied, but in the adult plant the inferior disc of the leaf is totally covered with brown dusty capsules, as is the case also with the *A. Ruta muraria*, so that they properly belong both to the same genus. Mr. Yalden.

PTERIS. Gen. pl. 1174.

Frustrificationes in lineis marginalibus.

PTERIS

aquilina I. PTERIS frondibus supradecompositis, foliolis pinnatis, pinnis lanceolatis; infimis pinnatifidis, superioribus minoribus. *Sp. pl.* 1533. (*Ger. em.* 1128. f. 2. *Moris. hist. j.* 14. t. 4. f. 3. *Blackwell t.* 325.)

Female Fern, or Brakes. *Anglis.*

Raineach. *Gaulis.*

Brachens. *Scotis.*

In woods, heaths, and rough stony soils abundantly. 4. VII. VIII.

The root is branched, yellow, and creeping; and, if cut obliquely, exhibits, in two fuscous lines, the figure of a cross, or, as some have fancied, the imperial or spreading eagle, which induced *Linnaeus* to apply to it the trivial name of *Aquilina*. The stalk varies from two to five feet in height, and is nearly quadrangular; the angles obtuse. This stalk is first of all alternately branched, and these branches are doubly pinnate: the *pinnulae*, or ultimate subdivisions, are sessile, lanceolate, nervous, stiff, and generally quite entire, and coalescent at the base. The uppermost terminating lobe is longer and wider than the rest, and is often either semipinnate, or auriculated at the base. The fructifications grow in a hairy line, on the under side, all round the edges of the pinnules. The capsules are globular, and are covered at first with a membrane, which gives way when the capsules are ripe.

U u

The

The root is viscid, nauseous and bitterish, and, like all the rest of the Fern tribe, has a salt mucilaginous taste. It creeps under the ground in some rich soils to the depth of five or six feet, and is very difficult to be destroyed. Frequent mowing in pasture grounds, plentiful dunging in arable lands, but, above all, pouring urine upon it, are the most approv'd methods of killing it. It has, however, many good qualities to counterbalance the few bad ones. Fern cut while green, and left to rot upon the ground, is a good improver of land; for its ashes, if burnt, will yield double the quantity of salt that most other vegetables will.

Fern is also an excellent manure for potatoes, for if buried beneath their roots, it never fails to produce a good crop.

Its use as a good litter in the stable and the fold is known to every farmer; as also that it makes a brisk fire, when dry'd, for the purposes of brewing and baking.

Its astringency is so great that it is used in many places abroad, in dressing and preparing kid and chamois leather.

In several places in the North the inhabitants mow it green, and, burning it to ashes, make those ashes up into balls, with a little water, which they dry in the sun, and make use of them to wash their linen with instead of soap.

In

In many of the western isles the people gain a very considerable profit from the sale of the ashes to soap and glass-makers.

In *Glen Elg*, in *Invernesshire*, and other places, we observed, that the people thatch'd their houses with the stalks of this fern, and fastened them down with ropes made either of birch-bark or heath. Sometimes they used the whole plant for the same purpose, but that does not make so durable a covering.

Swine are fond of the roots, especially if boil'd in their wash.

In some parts of *Normandy* we read that the poor have been reduced to the miserable necessity of mixing them with their bread. And in *Siberia*, and some other Northern countries, the inhabitants brew them in their ale, mixing one third of the roots to two-thirds of malt.

The ancients used the root of this fern, and the whole plant, in decoctions and diet-drinks, in chronic disorders of all kinds, arising from obstructions of the viscera and the spleen. Some of the moderns have given it a high character in the same intentions, but it is rarely used in the present practice. The country people, however, still continue to retain some of its ancient uses, for they give the powder of it to destroy worms, and look upon a bed of the green plant as a sovereign cure for the rickets in children.

ASPLENIUM. *Gen. pl.* 1178.

Fructificationes in lineolis disci frondis sparis.

* *Fronde simplici.*

*scolopendri-
um* 1

ASPLENIUM frondibus simplicibus cordato lingulatis, integerrimis, stipitibus hirsutis. *Sp. pl.* 1537. (*Ger. em.* 1138. *f.* 1. *Moris. hist. f.* 14. *t.* 1. *f.* 1. *Blackwell t.* 138.)

Hart's-Tongue. *Anglis.*

It grows in stony and shady places, as in *Dunglass-Den*, &c. *Dr. Parsons*, 4.

The leaves are lanceolate, and about a foot long, of a tough and firm texture, the angles at the base rounded or semicordate. The stalk and middle rib is covered with brown, membranaceous; narrow scales. The fructifications grow in parallel lines on the under surface, at a little less than right angles with the rib; narrow at first, and covered with a pale, membranaceous pellucid involucre, which bursts when the capsules become tumid, and then the lines are much wider, and the capsules globular and fuscous, each surrounded with an articulated ring, and containing a single seed.

There are several varieties of this plant taken notice of by authors.

β. The first has its leaves divided into many segments at the top; this may be seen figured in *Ger. em. p.* 1138. *f.* 2. & *Moris. hist. f.* 14. *t.* 1. *f.* 2.)

Fingered Hart's Tongue. *Anglis.*

The

- γ. The second has leaves undulated on the edges, and these never produce fructifications, this waving being analogous to doubleness in regular flowers.
Moris. hist. f. 14. t. 1. f. 5 & 9.

Waved Harts-Tongue. *Anglis*

There is yet another variety in which the stalk is branched, and produces three leaves, each of which is divided into several segments at the top. *Moris. hist. f. 14. t. 1. f. 8.*

Trifoliate branched Hart's-Tonge. *Anglis.*

It has an astringent quality, and is often used by the country people in the way of ointment as a vulnerary for burns or scaldings.

It is also recommended to be taken internally, boiled in red wine, for the hæmoptoe, diarrhæa, and dysentery.

**** Fronde pinnatifida.**

- ceterach* 2. ASPLENIUM frondibus pinnatifidis, lobis alternis confluentibus obtusis. *Sp. pl. 1538. (Ger. em. 1140. f. 1. Moris. hist. f. 14. t. 2. fig. ad Ceterach officinarum. Barrel ic. 1043, 1044, 1051, & 1052. Blackwell t. 216.)*

Spleenwort. *Anglis.*

It grows out of the fissures of rocks and walls, but not common; as upon the hill of *Kinnoul*, near *Perth*, &c. 4.

The leaves are about a finger's length, and grow many together in a tuft. They are lanceolate
 and

and pinnatifid ; the pinnules alternate, semioval and obtuse, smooth, and green on the upper surface, but entirely covered underneath with a thick coat of ferrugineous scales. The fructifications make their first appearance in five, six, or seven lines, inclining towards the middle nerve. When the capsules are ripe, the *involucria* which protected them burst, and cover the under surface of the leaf, as before-mentioned, in the form of scales.

It is recommended by the ancients for the various disorders of the spleen ; but, unhappily, modern experience does not countenance the recommendation.

*** *Fronde pinnata.*

trichomanoides 3.

ASPLENIUM frondibus pinnatis, pinnis subrotundis crenatis. *Syst. nat.* p. 690. *Sp. pl.* 1540. (*Ger. em.* 1146. f. 1. *Moris. hist. f.* 14. t. 3. f. 10. *ordinis superioris.* *Blackwell t.* 370. *Oed. Dan.* t. 119.)

Common Maidenhair. *Anglis.*

It grows out of the crevices of rocks and old walls frequently, as at the coves at *Weems*, on the coast of *Fife*, and at the *Hermitage* near *Edinburgh*. *Dr. Parsons, &c.* 4.

The leaves vary from three to ten inches in length, and grow many together in tufts. The stalk and middle rib are smooth, glossy, and always of a dark red or blackish colour. The *pinnæ* are generally

nerally roundish and crenated, but vary often in figure and crenatures. The feminal lines are three, four, or five; pale at first, but brown, and clustered together when ripe. The *involucrum* is a scale; the capsule is surrounded with a ring.

The country people sometimes give a tea or syrup of it for coughs and other complaints of the thorax, but it is rarely used in the shops.

viride 4.

ASPLENIUM fronde pinnata, pinnis subrotundis basi truncatis. *Huds. Flor. Ang. p. 385. A. Trichomanes ramosum. Lin. Sp. pl. 1541. (Moris. hist. f. 14. t. 3. f. 11. ordinis superioris. & ejus var. f. 13. t. ejusdem.)*

Green-ribb'd Maidenhair. *Anglis.*

It grows out of the crevices of the rocks in the highlands, but not very common. We gather'd it at *Creg-a-chnocaen*, on the boundary of *Coygoch* and *Affynt*, between *Ross-shire* and *Sutherland*. 4.

The stalks at the base are reddish, but the middle rib is always green. The *pinnæ* are generally of a rhomboidal form, more deeply indented than the preceding; in other respects it agrees with that, and *Haller* thinks it only a variety of it.

- β. Sometimes, but very rarely, the leaves are proli-ferous, or have another leaf growing out of them; which accident, we suppose, induced
Linnaeus

Linnaeus to call this species, *A. Trichomanes ramosum*.

marinum 5. **ASPLENIUM** frondibus pinnatis, pinnis obovatis ferratis, superne gibbis obtusis, basi cuneatis. *Sp. pl.* 1540. (*Ger. em.* 1143. *f.* 4. *Moris. hist. f.* 14. *t.* 3. *f.* 25. *bona.* *Pluk. t.* 253. *f.* 5. *Pet. Gaz. t.* 91. *f.* 1. *opt.*)

Sea Fern, or Maidenhair. *Anglis.*

Out of the rocks by the sea side in many places, as in the coves at *Weems*, on the coast of *Fife*; in the isle of *Arran*, out of the rocks going from *Corry* to *Brodrick* castle, and in the caves at *Dummadoon*, in the same island; in *Sanick-Cave*, in the island of *Isle*, &c. 4.

The leaves vary from three inches to a foot in length. The stalks are smooth, and generally of a red fuscous colour, especially at the base. The rib is sometimes of the same colour. The *pinnae* are usually three quarters of an inch long, but vary from half an inch to an inch long. They are nearly of a rhomboidal form, serrated on the edges, gibbous at the base on the upper side, but rescinded on the lower, and vary in number from eight pairs to twenty. The fructifications are disposed in lines, making an acute angle with the nerve, which lines vary from three to nineteen, and do not run together, but continue distinct when the capsules are ripe.

In

In the coves at *Weems* we observed some imperfect starved specimens of this plant, which we believe to be the same which *Sibbald* has described under the name of *Adianto vero affine Adiantum nostras majus Coriandri folio, in apice nonnihil rotundo, pediculo pallide rubente. Sibbald Scot. illust. p. 7. part 2.* and with which his figures agree, *t. 3. f. 1 & 2.*

**** *Fronde decomposita.*

ruta mura-
ria 6.

ASPLENIUM frondibus alternatim decompositis, foliolis cuneiformibus crenulatis. *Sp. pl. 1541.* (*Ger. em. 1144. f. 3. Blackwell t. 219. Oed. Dan. t. 190. opt. Moris. hist. f. 14. t. 5. f. 22.*)

Wall Rue, Rue Maidenhair. *Anglis.*

Out of the fissures of rocks and old walls not unfrequent. 4.

The leaves arise many from one root, are about a finger's length, and doubly branched; the primary branches are alternate, the secondary are generally furnished with three alternate, rhomboidal, crenated *pinnae*, the uppermost commonly divided a little way down into two or three lobes. The fructification appear at first in two or three yellowish lines, which, when ripe, run together, and almost cover the under surface of the leaf. The capsules are globular, fuscous, and surrounded each with an articulated ring, which bursting with a spring, the capsule opens into two hemisphaeres, and casts out its seeds.

The

CRYPTOGAMIA FILICES.

The leaves sometimes vary with longer and more acute pinnules, as figured by *Plukenet. t. 3. f. 3.* It was formerly received in the shops as a pectoral and deobstruent, and recommended in coughs, asthmas, obstructions of the liver and spleen, and in scorbutic complaints, but is at present out of repute.

*Adiantum
nigrum* 7°

ASPLENIUM frondibus subtripinnatis, foliolis alternis pinnis lanceolatis inciso-ferratis. *Sp. pl.* 1541. (*Ger. em.* 1137. *f. 1.* *Moris. hist. f.* 14. *t. 4. f. 16.* *Blackwell t.* 220. *Oed. Dan. t.* 250.)

Black Maidenhair. *Anglis.*

In the fissures of rocks frequent. On *Loch-Coat* hills, near *Linlithgow.* *Sibbald.* 4.

The leaves are eight or nine inches high, their outline triangular; the stalks of a shining dark red, or blackish colour. The leaves are first alternately pinnated; these *pinnae* are again secondly pinnated, and those secondary pinnules are lastly subdivided half-way down into oval ferrated lobes. The fructifications appear at first in whitish lines, which, when ripe, flow together, and often cover the inferior disc with brown globular annulated capsules.

It was formerly received in the shops as a pectoral, but is now disused.

POLYPODIUM.

POLYPODIUM. *Gen. pl.* 1179.

Fructificationes in punctis subrotundis, sparsis per discum frondis.

* *Fronde pinnatifida, lobis coadunatis.*

vulgare 1. POLYPODIUM frondibus pinnatifidis, pinnis oblongis subferratis obtusis, radice squamata. *Sp. pl.* 1544. (*Ger. em.* 1132. *f.* 1. 2. *Moris. hist. f.* 14. *t.* 2. *f.* 1. *ordinis superioris.* *Blackwell* 1. 215.)

Common Polypody. *Anglis.*

In the clefts of rocks, on old walls and houses, and on the trunks of decay'd trees. 4.

The root is covered with fuscous scales; the fibres with a dark ferruginous down; the leaves vary, from six to twelve inches in length, and are pinnatifid, or only once pinnated, and that not close to the middle rib, for the *pinnae* or lobes are united at the base, and are of a lanceolate form, but obtuse at the end, either entire on the edges, or slightly serrated, from half an inch to an inch and a half long. The fructifications are disposed in two rows of large circular dots, placed one on each side near the middle nerve of the pinnule. The capsules are nearly globular, and surrounded with a ring, at first pale, then orange-colour'd, and fuscous when ripe. The lowermost pinnules are frequently barren, from three to eight pairs.

2. There are two varieties of this plant; the first has serrated pinnules, mentioned by Ray in his *Synops.*

nops. Stirp. Brit. p. 117, under the name of Polypodium murale pinnulis ferratis. Barrel ic. 38.

γ. cambricum.

The other is the P. (*cambricum*) frondibus pinnatifidis, pinnis lanceolatis lacero-pinnatifidis ferratis. *Lin. Sp. pl. 1546. (Moris. hist. f. 14. t. 2. f. 8. Pluk. alm. t. 30. f. 1.)*

Welch or jagged Polypody. *Anglis.*

The pinnules in this are pinnatifid, and their lobes ferrated. It is certainly no other than a variety of the preceding, as we have had opportunities of determining, by observing its different gradations. In this state it is analogous to a double flower amongst the sexual plants, and therefore never produces fructifications. See ASPLENIUM *Scolopendrium var. γ.*

The roots of Polypody have a sweet nauseous taste. They were recommended by the ancients as a cathartic to purge away bile and melancholy, in the quantity of two drachms to a dose. The moderns have almost neglected them. Those few who retain their use, recommend an aqueous extract prepared from them, in obstructions of the viscera, or a kind of ptisan made of them for a pectoral.

**** Fronde pinnata.**

lonchitis 2. POLYPODIUM frondibus pinnatis, pinnis lanulatis ciliato-ferratis declinatis, stipitibus strigosis. *Sp. pl. 1548. (Ger. em. 1140. f. 3. Moris. hist. f. 14. t. 2. f. 1. ordinis inferioris. Oed. Dan. t. 497. opt.)*

Rough

Rough Polypody. Spleenwort-Polypody. *Anglis*.
At the foot of the rocks among the highland mountains, but not very frequent. We gathered it in plenty at *Creg-a-chnocaen*, the boundary of *Coygach* and *Affynt*, on the borders of *Sutherland*, near the western coast. Mr. *Stuart* observed it among the mountains of *Breadalbane*, and *Sibbald* in *Kinneil-Bank*. 4.

The leaves vary from three to eight inches in length, and are stiff and rigid. The stalk and middle rib are covered with brown filmy scales. The *pinnae* are supported on very short but visible footstalks; their upper edge slightly curved in a concave arch, the lower edge in a convex one, edged with ferrated spinules. The *pinnae* are truncated at the base, their upper angle is elevated, but the lower one as it were rescinded, and destitute of spinules. The fructifications grow in two series of circular dots, upon ten or twelve pairs of the uppermost *pinnae*; but the lowermost, which are about as many more, are barren. The scale, or *involucrum*, which covers each dot, is peltated. The capsules are globular, supported each on a footstalk, and containing each a single seed, according to *Gleditsch*.

*** *Fronde subbipinnata.*

phlegopteris 1. POLYPODIUM frondibus subbipinnatis, foliolis infimis reflexis, paribus pinnula quadrangulari coadunatis. *Sp. pl.* 1550. (*Moris. hist.* 3. p. 575. f. 14.

f. 14. t. 4. f. 17. Amman. Com. Acad. Petrop. 10. t. 21. p. 298.)

Soft pale-stalked Polypody. *Anglis.*

In shady places and a rocky soil; in the lowlands frequent, as about *Langholm* and *Panton-bridge*, in *Eskdale*, &c. 4.

The stalks are naked, six inches above the root, not totally smooth, but have a few filmy brown scales. The leaves, measured with the stalks, are about a foot high, soft, covered with a slight villosity, and doubly pinnatifid. The lowest pair of primary *pinnae* is deflex'd, the next pair is horizontal, and may be considered as the base of a triangle, with respect to the out-line of the superior part of the leaf. Each pair of primary *pinnae* is connected at the middle rib by the lowest pair of secondary pinnules on each side, so that the union resembles a quadrangular *pinnae*. The secondary pinnules are lanceolate, slightly falcated and obtuse, not divided quite to the nerve, nor altogether entire on the edges, for those upon the lower pair of *pinnae* are serrated. The fructifications are disposed in small pale brown dots, in two rows, near the edges of the pinnules.

cristatum 4 POLYPODIUM frondibus subbipinnatis, foliolis ovato-oblongis, pinnis obtusiusculis apice acute ferratis. *Sp. pl. 1551. (Moris. hist. 3. f. 14. t. 3. f. 11. ordinis medii male. Pluk. 181. f. 2. bona.)*

Crested

Crested Polypody. *Anglis.*

In woods and wet rocky places frequent. 4.

It varies from six inches to a cubit or more in height.

The stalk and nerves are covered with brown filmy scales. The outline of the leaf is nearly triangular. In most specimens the base of the leaf is only doubly pinnate; in many others trebly pinnate, and in both the pinnules are again pinnatifid; their lobes oval-obtuse and sharply serrated, the serratures generally a little reflex'd. The upper part of the leaf is only simply pinnate, the pinnules pinnatifid, and their lobes oval-obtuse, and serrated, as before. At the very extremity of the leaf the *pinnae* flow together. The fructifications are disposed in numerous small dots, in two rows, upon the back of the pinnules, as in the rest of the genus, and are covered at first with a scaly *involu-
crum*. *Linnaeus* says, that the upper part of the leaf only produces fructifications, and not the lower; in ours the whole is generally fertile, when the leaf comes to maturity.

filiæ mas 5. POLYPODIUM frondibus bipinnatis, pinnis obtusis crenulatis, stipite paleaceo. *Sp. pl.* 1551. (*Ger. em.* 1128. *f.* 1. *Moris. hist. f.* 14. *t.* 3. *f.* 6. *melior.* *Gunneri Flor. Norvegica. P. I. p.* 4. *tab.* 1. *f.* 4.)

Common Male Fern. *Anglis.*

Raineach. *Gaulis.*

In

In woods and stony soils abundantly. 4. VII.

The leaves are a cubit high, and grow in circular tufts. They are first alternately pinnate, the *pinnae* increasing in size from the base towards the middle, and afterwards gradually decreasing upwards to the summit of the leaf. These *pinnae* are again pinnatifid, or subdivided almost to the nerve into obtuse parallel lobes, crenated on the edges. The stalks are covered with brown filmy scales. The fructifications are kidney-shap'd, and covered with a permanent scaly shield, or *involucrum*. The capsules are of a pale brown, surrounded with a saffron-colour'd elastic ring.

This fern has nearly the same qualities, and is used for most of the same intentions as the *PTERIS aquilina*. They are both burnt together, for the sake of their ashes, which are purchased by the soap and glass-makers. In the island of *Jura* are exported, I was informed, annually, 150l. worth of these ashes.

Gunner relates, in his *Flor. Norveg.* that the young curled leaves, at their first appearance out of the ground, are by some boiled and eaten like asparagus; and that the poorer *Norwegians* cut off those succulent laminæ, like the nails of the finger at the crown of the root, which are the bases of the future stalks, and brew them into beer, adding thereto a third portion of malt, and in times of great scarcity mix the same in their bread.

The

The same author adds, that this fern cut green and dry'd in the open air, affords not only an excellent litter for cattle, but, if infused in hot water, becomes no contemptible fodder to goats, sheep and other cattle, which will readily eat, and sometimes grow fat upon it: a circumstance well worth the attention of the inhabitants of the *Highlands* and *Hebrides*, as great numbers of their cattle, in hard winters, frequently perish for want of food.

filix femina
6.

POLYPODIUM frondibus bipinnatis, pinnulis lanceolatis pinnatifidis acutis. *Sp. pl.* 1551 (*Pluk. phyt. t.* 180. *f.* 4. *Moris. hist.* 3. *p.* 579. *f.* 14. *t.* 3. *f.* 8. *bona.*)

Female Polypody. *Anglis.*

In woods and moist shady places, but not so common as the preceding. 4.

The leaves are a cubit high; the stalk generally waved and smooth, but sometimes scaly. The first division of the *pinnæ* is distinct and distant, thirty or more in the series. The nerves smooth, fine, and slender: the second division, or the pinnules upon these nerves, are also distinct, very fine, delicate, and numerous, being upwards of 30 pair upon each nerve, of a linear lanceolate form, and semipinnate, the lobes having generally two or three acute serratures at the extremity. These lobes are tender and pellucid, commonly nine or ten pair in number, varying much

much in figure, being sometimes acute and falcated (which is their most usual appearance) at other times truncated and more deeply and acutely ferrated, which we consider only as varieties.

The stalks also are sometimes found of a red colour, as at the foot of *Ben-lomond*

The fructifications at first appear in distinct round dots, covered with deciduous scales, but, when arrived to maturity, they often flow together, and almost cover the inferior disc of the leaf.

Thelypteris
7.

POLYPODIUM fronde sub-bipinnata, pinnis pinatifidis integerrimis, subtus undique polline tectis. *Syst. Nat. edit. 13. p. 788. Mantiss. p. 505.*
ACROSTICHUM *Thelypteris. Sp. pl. 1528.*
(*Moris. hist. f. 14. t. 4. f. 17. prima superioris ordinis ad sinistram. Pluk. t. 179. f. 3. Frons sterilis. t. 284. f. 1. bona.*)

Marsh Polypody. *Anglis.*

In boggy places not unfrequent, especially in the lowlands. 4.

The leaves vary from six inches to a cubit in height, but are generally about ten inches high, of a pale green colour, at first view resembling the **POLYPOD**. *Filix mas.* The stalks are a little scaly when young, but smooth when grown to maturity. The leaves are first pinnated with an uncertain number of pairs, from 20 to 40; these are again pinnatifid, or divided almost to

the nerve, into 15 or 20 pair of oval, entire lobes. The fructifications make their first appearance in two rows of small, round, pale, distinct dots, near the edges of these lobes. These dots, as they grow riper, run together in marginal lines, the edges of the lobes being a little reflex'd or contracted; and in the old plants the under sides of the lobes are totally covered with brown capsules, as in the genus of ACROS-TICHUM. The fructifications are contained within a singular laciniated, or radiated *involu-*
crum. The capsules are pale brown, and sur-
rounded with a dark red articulated shining ring.

The younger leaves are barren, and softer than the fruitful ones; their pinnules wider, and of a paler green; sometimes slightly and irregularly crenated.

aculeatum 8 POLYPODIUM frondibus bipinnatis, pinnis lunulatis ciliato-dentatis, stipite strigoso. *Sp. pl.* 1552. (*Pluk. t. 179. f. 6. junior planta. 180. f. 1. adulta. Moris. hist. f. 14. t. 3. f. 15. opt.*)

Prickly Polypody. *Anglis.*

In woods and shady places, as about *Drumlanrig*, in *Nithsdale*, and on *Cartland* rocks, near *Lanerk*, &c. 4.

The leaves are generally near a cubit high, of a firm and rigid texture. The stalk is remarkably scaly, the base especially is covered with nume-

rous broad fuscous membranes, and the rib and nerves have a slight filmy down, of the same colour. The primary *pinnae* are longest near the middle of the rib, and from thence decrease gradually towards the top and base, from 30 to 40 pair in number. These are again pinnated with about twenty pair of irregularly oval, acute, nervous, auriculated pinnules, edged with sharp prickly dents. The first or lowest of these pinnules, on the upper side, at the base of the nerve, are larger than any of the rest; and the auricle or appendage of each pinnule is placed at its base on the off side from the middle rib. The extreme pinnules are not distinct, but flow together. The fructifications are disposed, as usual, in a double series of circular dots upon the back of each pinnule, and covered with peltated scales. Ten or more of the lowest pair of *pinnae* are generally barren.

We have sometimes gathered a variety of this, in which the inferior pinnules were pinnatifid or semipinnate at their base, but in other respects similar.

The young leaves also put on a very different appearance from the full-grown ones. They vary from six inches to a foot in height, and are only simply pinnate, the *pinnae* of a lanceolate and falcated form, semipinnate, and edged with prickly serratures. The auricles at the base of the *pinnae* are conjoin'd at the top of the leaf, but often separate at the bottom of it. In this state,

state, if there are any fructifications, they are only to be found upon six or eight of the uppermost pair of *pinnæ*. This is the *Filix lonchitidis affinis*. *Raii Syn.* p. 121. f. 4, which *Plukenet* has figured in two different states, *Almag.* t. 179. f. 6. & t. 180. f. 3. and this is the *POLYPODIUM lobatum*. *Huds. Fl. Ang.* p. 390.

It grows commonly in shady places. Mr. *Talden* observ'd it close by *Moffat* well, in *Annandale*. 2.

fragile 9. *POLYPODIUM* frondibus bipinnatis, foliolis remotis, pinnis subrotundis incis. *Sp. pl.* 1553. (*Ger. em.* 1135. f. 2. *huic pertinere videtur*, & etiam *Vaill. Paris.* t. 9. f. 1. *Pluk. alm.* t. 180. f. 5. *bona. Oed. Dan.* t. 401. opt.)

Fine-leav'd brittle Polypody. *Anglis.*

Upon rocks, and dry stoney places frequent. 2.

It varies from two inches to ten or twelve in height; its most common stature about half a foot. The smaller varieties are figured by *Barrelier.* ic. 432. f. 2. and by *Seguier, Plant. Veronens.* t. 1. f. 1.

The stalks are smooth, slender, very brittle, and reddish at the base. The leaves are doubly pinnate, the *pinnæ* nearly opposite, from 10 to 15 pair, the lowermost very remote, shorter than the middle ones, and all of them placed nearly at right angles with the rib. The pinnules in the second division are six or eight pair, each of them semipinnate, their lobes obtusely oval, and dented

dented on the edges, and about four or five pair, with an odd one at the end upon each pinnule.

The fructifications are round dots, white at first, large for the size of the lobes, brown and confluent when ripe, and covering the under side of the leaf, as in the genus of ACROSTICHUM.

Haller and Weis are of opinion, that the POLYPOD. *Rbæticum*. Lin. *Sp. pl.* 1552, is no other than a variety of the preceding. See *Ger. emac.* 1142, f. 3. *Moris. hist. f.* 14. t. 4. f. 28. *Pluk.* 179. f. 5? secundum synonym. sed fig. dissimilis.

The leaves of this are nearly a foot high, of a more tender substance, a paler green colour, and wider than the foregoing; the *pinnæ* more numerous, from 15 to 20 pair, placed at a more acute angle with the rib. The pinnules are longer and wider, their lobes nearly lanceolate and acutely serrated.

The fructifications are commonly smaller, and more distinct.

**** *Fronde supradecomposita.*

dryopteris POLYPODIUM frondibus supradecompositis, 10. foliolis ternis bipinnatis. *Sp. pl.* 1555. (*Ger. em.* 1135. f. 3. *Moris. hist. f.* 14. t. 4. f. 19. *bona. Amman. Comment. Acad. Petrop. T. X. p.* 301. *Tab.* 22, f. 2.)

Small-branched Polypody. *Anglis.*

In dry stoney places not uncommon, as at *Langholm*

holm and *Broomholm*, in *Eskdale*, and about *Dunkeld*, in *Stormount*, &c. 4.

The plant is about a foot high; the stalk slender, smooth, brittle, and naked above half way up, afterwards doubly pinnate, the *pinnæ* standing opposite, and assuming a triangular division. The pinnules are subdivided almost to the nerve, the lobes of a linear obtuse form, the lower ones crenated on the edges, the upper ones often entire, and running together. The *pinnæ* in this species do not grow exactly perpendicular, but decline towards the horizon. The fructifications are disposed in two rows of large round dots upon each lobe, which, when ripe, expand and cover the inferior side of the leaf.

The *pinnæ* are about 12 or 15 pair, their subdivisions nearly the same, smooth, of a pale green colour. The outline of the leaf approaches near to an equilateral triangle.

Fructificationes in maculis terminalibus, sub replicato margine frondis.

capillus ve- ADIANTUM frondibus decompositis, foliolis alternis 1. ternis, pinnis cuneiformibus lobatis pedicellatis.
Sp. pl. 1558. (*Ger. emac.* 1143. f. 1. *Moris. hist.* f. 14. t. 5. f. 6.)

True Maidenhair. *Anglis.* 4.

Dr. *Sibthorpe*, the present most obliging professor of botany, at *Oxford*, favoured me with the sight of a large and perfect specimen of this fern,

fern, in the copious *Herbarium*, preserved at the physic garden in that university, to which specimen a label was annexed, with this inscription: "From the isle of *Arran*, near *Galloway*; from Mr. *Stonestreet*."

The specimen is to be found amongst the ferns, *Lib. 3, p. 3, f. 3.*

This is our authority for inserting it as a native of *Scotland*. The plant is about six inches high. The stalk smooth, slender, brittle, and of a shining reddish black colour, naked above half way up, afterwards doubly and sometimes trebly branched; the branches alternate and distant. The lobes, or pinnules, are fan-shap'd, smooth and thin, longitudinally striated, dented at the top, generally cut into two or three, and sometimes six or seven obtuse segments. These pinnules grow alternate, and are supported on short slender footstalks.

The fructifications grow near the anterior margin of the pinnules, on the under side, one or two out of each dent, drawing the margin a little downwards; they appear like thin white scales at first, but are brown when ripe. The involucre is membranaceous, covering globular capsules, surrounded each with an articulated ring.

It is esteemed as a pectoral, and gives name to the syrup called *Capillare*, which is said to have rarely any of this plant in its composition, being commonly

commonly made of sugar and water only. *Scopol. Flor. Carniol.*

ADIANTUM trapeziforme. *Lin. Sp. pl.* 1559. supposed by *Sibbald*, and others who have copied him, to be a native of *Scotland*, ought in order to be inserted in this place, but we are persuaded that the plant intended for it was no other than an imperfect specimen of **ASPLENIUM marinum**, which see above.

TRICHOMANES. *Gen. pl.* 1181.

Frustrificationes solitariae, stylo setaceo terminatae, margini ipsi frondis insertae.

tunbrigense **TRICHOMANES** frondibus pinnatis, pinnis oblongis dichotomis decurrentibus dentatis. *Sp. pl.* 1561. (*Moris. hist. f.* 15. *t.* 7. *fig.* 50. *Bocconius.* 2. *p.* 24. *t.* 2. *f.* 1. *Pluk. alm.* 1. 3. *f.* 5. *bona*, & *f.* 6.)

Tunbridge Trichomanes. Anglis.

We observed it frequently in the *Highlands*, growing amongst moss at the foot of moist rocks, as by the sides of the rivulets in ascending *Ben-Lomond*; on moist rocks by the sea-side near *Corry*, in the isle of *Arran*; in dry stoney places at the *Danish* fort of *Dunvororig*, in *Isla*, at *Loch-Mari*, in *Ross-shire*, and at the foot of the mountains in *Breadalbane*, in numberless places, &c.
4. VIII.

It has also been discovered by *Dr. Burgess*, in several

veral places of the lowlands, as upon the rocks on the South side of the water of *Ea*, a little below the *Hollas*; and upon the rocks at the foot of the sandy holm on *Glenkill-Burn*, in the parish of *Kirkmichael*, in *Dumfrieshire*, &c.

The stalks are branched, and creep amongst the moss. The leaves are about an inch high, of fine pellucid green colour when young, but brown in decay. They are alternately pinnate, the *pinnae* generally bifid, often dichotomous, the lobes of a long elliptic form, finely serrated on the edges, decurrent, or divided each in the middle by a dark nerve.

The fructifications arise in single globules from the edges of the lobes near the angles of the ramifications, and are composed of two foliaceous green valves, containing several small brown seeds.

PILULARIA. *Gen. pl.* 1183.

Flores *masculi* ad latus frondis.

Fructificationes *femineae* ad radicem, globosae, quadriloculares.

globulifera PILULARIA. *Sp. pl.* 1563. (*Pet. herb. t.* 9. *f.* 8. *1.* *Vaill. Paris. t.* 15. *f.* 6. *Dillen. mus. t.* 79. *f.* 1. *bona. Oed. Dan. t.* 223. *opt.*)

Pepper-grass. *Anglis.*

In damp places that have been overflowed during the winter, but not common. 24. VI-IX.

It

It creeps upon the ground and forms a mat, increasing by runners, which throw out numerous white radicles at the joints. The leaves grow erect from the runners, are about two or three inches high, narrow, round and subulate, of a yellow green colour, resembling young grass, many of the smallest curled at the extremity.

The male fructifications, according to *Linnaeus*, grow in a powdered line on the back of the leaves.

The female ones are globular, of the size of a pepper-corn, placed singly upon the root at the base of the leaves, apparently sessile, but in reality supported on a very short peduncle. They are covered with a hairy rind, and are divided into four cells, each containing several obtusely oval white seeds, imbedded in a rind of hairy farinaceous pulp.

ISOETES. *Gen. pl.* 1184.

Flores masculi *Anthera* intra basin frondis.

Flores feminei *Capsula* bilocularis, intra basin frondis.

lacustris 1. ISOETES. *Sp. pl.* 1563. (*Dillen. musc. t.* 80. *f.* 2. *opt. Oed. Dan. t.* 191.)

Quillwort. *Anglis.*

It grows under the water at the bottom of the highland lakes, but not very common. We observed it in some small lochs near the foot of the paps

paps of *Jura*, and in others above *Great-Breeze-Hill*, near *Talisker*, in the isle of *Skye*, and Mr. *Stuart* at the west end of *Loch-Tay*, in *Breadalbane*, &c.

The leaves are subulate, convex on the outside, plain on the inside, from three to five or six inches long, succulent, porous, brittle, internally reticulated, or divided by longitudinal and alternate semitransverse membranes. They grow many of them in a cluster, dilated at their base, and laid upon one another so closely as to form a rind of tuberos root, from which many long, simple, fistular radicles descend deep into the mud.

The fructifications are placed within the base of the leaves, at the end of the root. The seeds are small, numerous, round and white.

MUSCI.

M U S C I.

LYCOPODIUM. *Gen. pl.* 1185.*Anthera* bivalvis, sessilis. *Calyptra* nulla.*clavatum* 1

LYCOPODIUM foliis sparsis filamentosis, spicis teretibus pedunculatis geminis. *Sp. pl.* 1564. (*Ger. em.* 1562. f. 11. *Moris. hist.* f. 15. t. 5. f. 2. *Pluk. t.* 47. f. 8. *Dillen. mus.* t. 58. f. 1. *opt. Oed. Dan. t.* 126.)

Common Club-Moss. *Anglis.*

In dry mountainous heathy places, and fir-forests.

4. VII.

The stalk is prostrate, branched, and creeping, from a foot to two or three yards long; the radicles woody. The leaves are numerous, narrow, lanceolate, acute, often incurved at the extremity, terminated with a long white hair, and every where surround the stalk. The peduncles are erect, firm, and naked (except being thinly set with lanceolate scales) and arise from the ends of the branches. They are generally two or three inches long, and terminated with two cylindrical, yellowish spikes, imbricated with oval-acute scales, finely lacerated on the edges, and ending with a hair. In the *Ala*, or bosom of each scale is a kidney-shap'd capsule, which bursts with elasticity when ripe, and throws out

out a light yellow powder, which blown into the flame of a candle, flashes with a small explosion.

The *Swedes* make mats of this moss to rub their shoes upon.

In *Russia*, and some other countries, the powder of the capsules is used in medicine to heal galls in children, chops in the skin, and other sores. It is also used to powder over officinal pills, and to make artificial lightning at theatres.

The *Poles* make a decoction of the plant, and, dipping a linen cloth into it, apply it to the heads of persons afflicted with the disease called the *Plica Polonica*, which is said to be cured by this kind of fomentation.

selaginoides LYCOPODIUM foliis sparsis ciliatis lanceolatis, spicis solitariis terminalibus foliolis. *Sp pl.* 1565. (*Haller. hist. n.* 1717. t. 46. f. 1. *Scheuchz. It. Alpinum* Tom. I. p. 43. t. 6. f. 1. *bene. Dillen musc.* t. 88. f. 1. *Oed. Dan.* t. 70.)

Prickly or ciliated Club-moss. *Anglis.*

In boggy places by the sides of rivulets on the highland mountains frequent. 4. VII-VIII.

The stalk is branched and creeping; the fructify'd branches erect, one or two inches high, surrounded every where with oval-lanceolate patent, and elegantly ciliated leaves. The capsules are placed in the *Axæ* of the upper leaves, and are of two kinds; the uppermost round and single, containing only a pollen, or powder; the lowermost

most united four together, one pair upon another, each containing a single, round hard seed.

inundatum 3. L. foliis sparsis integerrimis, spicis terminalibus foliosis. *Sp. pl.* 1565. (*Vaill. Paris. t.* 16. *f.* 11. *Dillen. musc. t.* 62. *f.* 7. *Oed. Dan.* 336.)

Marsh Club-moss. *Anglis.*

In wet heathy places, and near the sides of lakes, but not common. On the heathy moors above *Blair*, in *Athol*. *Dr. Parsons.* 4. VII.

The stalks are two or three inches long, adhere close to the ground, are branched and creeping, and surrounded with numerous lanceolate leaves, all curved upwards. The spikes are erect and sessile, about two inches high, a little thicker than the branches, and surrounded with the like leaves, but all erect, in the *alæ* of which are placed very minute round capsules.

Selago 4. LYCOPODIUM foliis sparsis octofariis, caule dichotomo erecto fastigiato, floribus sparsis. *Sp. pl.* 1565. (*Moris. hist. f.* 15. *t.* 5. *f.* 9. *Dillen. musc. t.* 56. *f.* 1. *bona. Oed. Dan. t.* 104.)

Fir Club-moss. *Anglis.*

Garbhag-an-t-fleibh. *Ganlis.*

On the highland mountains, and in the *Hebrides* frequent. 4. VIII.

The stalk at the base is single and reclining, but a little higher is divided into upright dichotomous branches, from two to six inches high, surrounded

ounded with eight longitudinal oblique series of lanceolate, smooth, rigid, imbricated leaves.

Near the summits of the branches, in the *axils* of the leaves, are placed single kidney-shap'd capsules, consisting of two valves, which open horizontally like the shells of an oyster, and cast out a fine yellow powder. These capsules *Linnaeus* supposes to be *Anthere*, or male parts of fructification.

In the *axils* also of many of the leaves, near the tops of the branches, are often found what the same great author calls *female flowers*, but which the ingenious *Haller* esteems to be only gems or buds of a future plant. They consist, first, of four stiff, lanceolate, incurv'd, minute leaves, one of the outermost longer and larger than the rest. These are supposed to correspond to the *calyx* in regular flowers. Again, at the bottom of this *calyx* are five small pellucid substances, resembling leaves, visible only by a microscope, which are supposed analogous to pistils. These, in time, grow up into three large broad leaves, two of the five united together like the hoof of an ox, with a third narrower one annexed at the base; and two other minute ones opposite to the other three. These five leaves are joined at the base, and in Autumn, falling from the *calyx*, vegetate, and produce a new plant. See a dissertation *de seminibus muscorum*. *Amœnit Acad.* 2. p. 261.

In the island of *Raafay*, near *Sky*, in *Rossshire*, and some other places, the inhabitants make use of this plant instead of allum, to fix the colours in dying.

The highlanders also sometimes take an infusion of it as an emetic and cathartic, but it operates violently, and, unless taken in a small dose, brings on giddiness and convulsions.

Linnaeus informs us, that the *Swedes* use a decoction of it to destroy lice on swine and other animals.

Annotinum 5 LYCOPODIUM foliis sparsis quinquefariis subferratis, surculis annotino-articulatis, spicis terminalibus glabris erectis: *Sp. pl.* 1566. (*Moris. bist. f.* 15. *t.* 5. *f.* 3. *Pluk. t.* 205. *f.* 5. *Dillen. musc. t.* 63. *f.* 9. *opt. Oed. Dan. t.* 127.)

Jointed Club-moss with Juniper leaves: *Anglis.*

In rough stony places on the sides of the highland mountains, but not common. 4. VIII.

The stalks are two or three feet long, prostrate and creeping; the branches erect, dichotomous, and divided into joints by the shoots of each year. The leaves are rigid, smooth, linear-lanceolate, acute, decurrent at the base, in general slightly serrated, but sometimes entire, erect, and closely imbricated in the new shoots, but horizontal and sometimes reflexed in the old ones. The spikes grow singly at the extremities of the

Y y

branches,

branches, and are yellow, nearly cylindrical, three quarters of an inch long, and perfectly sessile. The scales are acutely oval, and finely lacerated on the edges; the capsules kidney-shap'd.

alpinum 6. **LYCOPODIUM** foliis quadrifariam imbricatis acutis, furculis erectis dichotomis, spicis sessilibus teretibus. *Sp. pl.* 1567. (*Lin. Flor. Lap. t. 11. f. 6. Dillen. musc. t. 58. f. 2. Oed. Dan. t. 79.*)

Alpine Club-moss. Savin Club-moss. *Anglis.*

It grows near the summits of almost all the high mountains of the Highlands and *Hebrides* abundantly. 4. VIII.

The stalk is prostrate and creeping, from a foot to a yard long, thinly scattered with a few scaly leaves. The branches grow in clusters, two or three inches long, erect and dichotomous, imbricated with four longitudinal series of short, stiff, oval-acute incurved leaves, pressed close to the branches. The lower branches are triangular, and the imbrication of the leaves so lax, that their position is only alternately opposite. The spikes are single, sessile, about half an inch long, and terminate the branches. The scales are oval-lanceolate, acute, finely crenated on the edges, and of a dull green colour. The capsules are large and yellow.

The

The young branches are of a blue-green or glaucous colour, rather prostrate than erect; the old ones are erect, and turn yellow in decay.

SPHAGNUM. *Gen. pl.* 1187.

Anthera operculata, ore lævi. *Calyptra* nulla.

palustre 1. SPHAGNUM ramis deflexis. *Sp. pl.* 1569. (*Vail. Paris. t. 23. f. 3. Dillen. t. 32. f. 1. Oed. Dan. t. 474.*)

Bog-moss. *Anglis.*

In bogs abundantly. 4. VII. VIII.

It grows together in wide patches, so as frequently to cover a large portion of the bogs. The stalks are found from two inches to two feet long, irregularly furrounded with numerous, conical, pendent branches, and terminated with a rosaceous cluster of short erect ones. The stalk and branches are every where imbricated with oval, brittle, pellucid, slightly concave leaves, the lower ones faded, the upper ones white, yellowish green, and sometimes red. The capsules are oval, or almost round, erect, fuscous, smooth, and grow out of the *alæ* of the clusters, at the tops of the branches, supported on short peduncles. At the base of the capsule is an annular swelling, which is a kind of receptacle called by *Linnaeus* an *Apophysis*. The *Operculum*, or lid of the capsule is convex, with a short point in the centre. The rim of the capsule has no beard or *cilia*, but is quite smooth.

The *pollen*, or powder, is green. *Linnaeus* says, that this capsule, or *Anthera*, when it bursts, makes a small explosion.

There is a variety of this with slender capillary branches, narrower and more acute leaves, and longer stalks, but in other respects similar to the foregoing. See *Dillen. musc. t. 32. f. 2.*

It is generally believed that the roots and decay'd stalks of this moss constitute a principal part of that useful bituminous substance call'd peat, which is the chief fuel of the northern regions. So that those parts of the creation, which, to the inconsiderate mind of man, appear the most trifling and insignificant, will be often found, upon mature enquiry, to be ordain'd by Providence for the wisest and most gracious purposes.

The *Lapland* matrons are well acquainted with this moss. They dry and lay it in their children's cradle, to supply the place of bed, bolster, and every covering; and, being chang'd night and morning, it keeps the infant remarkably clean, dry, and warm. It is sufficiently soft of itself, but the tender mother, not satisfied with this, frequently covers the moss with the downy hairs of the rein-deer, and by that means makes a most delicate nest for the new-born babe. *Fl. Lapon.*

PHASCUM.

PHASCUM. *Gen. pl.* 1189.*Anthera* operculata, ore ciliata. *Calyptra* minuta.

maximum 1 PHASCUM acaule, anthera sessili, foliis radicalibus obtusis, contralibus ciliatis. *Hall. hist. n.* 1725. (*Haller opusc. Botan. t. 2. p. 308. Hist. Tom. III. p. 56. t. 46. f. 3. bona. Dillen. musc. t. 32. f. 13. Oed. Dan. t. 249. fig. 3. ad dextram.*)

The larger mountain Phascum. *Anglis.*

Upon rocks covered with little earth, by the sides of the mountains in the highlands and lowlands. The Rev. Mr. *Sheffield*, Fellow of *Worcester* college, in *Oxford*, observ'd it in the lowlands on the sides of *Hart Fell*, in *Annandale*. It has been found also on many other mountains. VIII.

The outer leaves are oval and obtuse, the inner ones lanceolate, and bearded with one, and sometimes three, *Aristæ*. The capsule, or *Anthera*, is oval, and larger than in the following species; the *Operculum*, or lid, conical and acute.

acaulon 2. PHASCUM acaule, anthera sessili, foliis ovatis acutis conniventibus. *Sp. pl.* 1570. (*Dillen. musc. t. 32. f. 11. ♂ varietas minor fig. 12. ♂ Vaill. Paris. t. 27. f. 2. bona.*)

Oval Phascum. *Anglis.*

Upon gravelly banks. ☉. IV.

The leaves, when young, connive together in the form of a small oval bulb, about 1-6th of an inch

inch long, and hide the capsule, which is oval and orange-colour'd at first, but, when ripe, fuscous and shining, and about the size of a miller seed.

subulatum 3 *P. acaule*, anthera sessili, foliis subulato-setaceis patulis. *Sp. pl.* 1570. (*Vaill. Paris. t.* 29. *f.* 4. *Dillen. musc. t.* 32. *f.* 10. *opt.* *Oed. Dan. t.* 249. *f.* 1, 2, *austræ.*)

Subulated Phascum. *Anglis.*

Upon banks and mole-hills. ☉. IV.

This is the smallest plant we know of the moss tribe. It is about 1-10th of an inch high, and grows in tufts, or else would be hardly visible. The capsule is placed in the centre of the leaves, and is roundish and yellow.

FONTINALIS. *Gen. pl.* 1190.

Antbera operculata, calyptrata, subsessilis, perichætio inclusa.

antipyretica 1. FONTINALIS foliis complicato-carinatis trifariis acutis. *Sp. pl.* 1571. (*Moris. hist. f.* 15. *t.* 6. *f.* 32. *Loes. Pruss. p.* 173. *t.* 53. *Vaill. Paris. t.* 33. *f.* 5. *Michel. Gen. t.* 59. *f.* 9. *Dillen. musc. t.* 33. *f.* 1. *opt.*)

Great Water-moss. *Anglis.*

In rivers upon rocks and roots of trees frequent.
4. VIII.

The

The stalks are filiform, red, branched, eight or ten inches long, and float with the stream. The leaves are oval-lanceolate, their sides compress'd, and are loosely imbricated in a triple series.

The capsules, or *Antherae*, arise out of the *axe* of the leaves, about the middle and lower part of the stalk and branches, having very short peduncles, and included within a sessile *perichæti-um*, or cup, composed of oval scales. These *antherae* are of a cylindrically oval form, having a pointed red conical *Operculum*. The *Calyptra*, or cap, is conical, and the rim of the *Anthera* ciliated.

Linnaeus informs us, that the *Swedes* cram this moss between the wood-work in their chimnies, to prevent their taking fire, which induced him to give it the name of *Antipyretica*.

minor 2.

F. foliis ovato-lanceolatis trifariis acutis, passim geminis, antheris terminalibus. *Sp. pl.* 1571. (*Dillen. musc. t. 33. f. 2*)

Lesser Water-moss. *Anglis.*

It grows in the like places with the preceding, and is nearly related to it, perhaps only a variety. It is about three or four inches long, more branched, the leaves smaller, more obtuse, concave, but not compress'd, and more closely imbricated. The capsules grow out of the ends of the lateral branches, which is the most material distinction.

FONTINALIS.

squamosa 3 FONTINALIS foliis imbricatis subulato-lanceolatis, antheris lateralibus. *Sp. pl.* 1571. (*Dillen. musc. t.* 33. *f.* 3.)

Shining black Water-moss. *Anglis.*

In rivulets near the tops of the highland mountains, as on *Ben-na-Caillich*, in the parish of *Christ-Church*, in *Strath-Swardle*, in the isle of *Skye*, &c. 4. VIII. IX.

This again differs very little from the two preceding, and perhaps may be only a variety. The leaves are more narrow, lanceolate, acute, and closely imbricated; the fructifications we have not seen, but, according to *Dillenius*, they are produced from the sides of the branches.

The plant may be readily discovered by its shining black green colour.

SPLACHNUM. *Gen. pl.* 1191.

Antbera infidens Apophysi maximæ coloratæ. *Calyptra* caduca.

Stella feminea in distincto individuo.

ampullaceum 1. SPLACHNUM umbraculo ampullaceo obconico. *Sp. pl.* 1572. (*Moris. hist. f.* 15. *t.* 6. *f.* 10. *Vail. Paris. t.* 26. *f.* 4. *Dillen. musc. t.* 44. *f.* 3. *opt.*)

Crewet Splachnum. *Anglis.*

In bogs and marshes, and often upon cow-dung. V.

It grows in thick tufts, and is about two inches high. The leaves are oval-lanceolate, terminated

nated with a long point or beard. The top of the filament, or peduncle, swells into the form of an inverted cone, which *Linnaeus* terms an *Apophysis*, or *Umbraculum*; upon the top of which is placed a cylindrical *Antbera*, like the neck of a crewet. The *Calyptra* is conical, and resembles a small extinguisher.

vasculorum 2. SPLACHNUM umbraculo ampullaceo subglobofo. *Sp. pl.* 1572. (*Raii Syn.* p. 93. t. 3. f. 2. *Dillen. musc.* t. 44. f. 4. *bona. Oed. Dan.* t. 192. *opt.*) PHASCUM pedunculatum. *Huds. Fl. Ang.* 397.)

Acorn-shap'd Splachnum. *Anglis.*

Upon bogs and cow-dung, and upon the points of rocks on the tops of the highland mountains, as on *Ben-Lomond*, and in the isle of *Sky*, and elsewhere. *Dr. Burges* observed it also in the lowlands, as on *Scarbrae-moss*, in the parish of *Kirkmichael*, growing upon cow-dung, and in several other wet places. VII. VIII.

This differs little from the preceding, and perhaps is no more than a variety. The filaments are about an inch high. The leaves oval-acute, not so lanceolate and bearded as the other. The *Apophysis*, with the *Antbera* at the top of it, form together nearly an oval figure, not unlike an acorn in its cup, the *Apophysis* being transversely semioval, and of a blood-red colour; the *Antbera* short and conical. The *Calyptra* is the

the same as that of the other. The *Operculum* is short and obtuse, and the rim of the *Anthera* has eight large horizontal *Cilia*. The *Anthera* of the other is also ciliated, but not so distinctly. It is an elegant moss, and very distinguishable on account of its orange-colour'd filaments, and dark red capsules. See a treatise on the *Splachnum*. *Aman. Acad. Lin.* TOM. 2. p. 242.

POLYTRICHUM. *Gen. pl.* 1192.

Anthera operculata, apophysi minimæ insidens.
Calyptra villosa.

Stella feminea in distincto individuo.

COMMON 1. POLYTRICHUM caule simplice, anthera parallelepipedæ. *Sp. pl.* 1573. (*Vaill. Paris. t.* 23. f. 8. *absque flore. a. b. flores. feminei. Michel. Gen. t.* 59. f. 1. *I. E. M. O. P. Q. R. Dillen. musc. t.* 54. f. 1. *floribus masculinis & femininis optimè.*)

Common Polytrichum, or Great Golden Maiden-hair. *Anglis.*

In woods and wet boggy places frequent. 4. V.

This moss grows in patches, the stalks erect, generally single and unbranched, from three inches to a foot, or even a yard, high. The leaves are numerous, stiff, lanceolate, acute, growing round the stalk without order, and, if viewed with a microscope, appear to have their edges finely ferrated. They are of a bright green when young and fresh, but reddish when dried or in decay. The filaments, or peduncles,

are of a shining red, or orange colour, from two to four inches long, arising singly from the top of the stalks, and surrounded at their base with a cylindrical tubular *vagina*, or *perichæti- am*. The *Anthera*, or *Capsule*, is quadrangular, green at first, afterwards yellow, and red when ripe, having an annular *pedestal*, or *apophysis*, at its base. The *Operculum* is flat, with a projecting point in the centre, and underneath is a whitish circular membrane, placed in the middle of the capsule's orifice, and sustained there by numerous arched threads, or *cilia*, connected by one end to the circumference of this membrane, and by the other fastened to the ring of the *anthera*. The *pollen*, or, as others term it, the *seed*, is freed from the *anthera* or *capsule* through the space between the *cilia*. The *calyptra* is two-fold, an internal and external one; both which at first entirely cover and hang over the *anthera*. The internal one is conical, membranaceous and smooth; the external one is composed only of tawny hairs, connected into a sort of mat, lacerated at the base, and serving like a roof of thatch to defend the other.

The discovery of this two-fold *Calyptra* we owe entirely to our ingenious friend, Mr. *Curtis*, the celebrated author of the *Flora Londinensis*, and a most sagacious observer of Nature's works.

Besides the stalks before described, there are commonly some others near at hand, which are destitute

stitute both of filaments and capsules, but are terminated with a kind of rosaceous cup, either of a bright red or yellowish colour, composed of leaves of different sizes, the outermost broad, the innermost lanceolate, growing gradually more and more fine and slender to the centre.

This cup is look'd upon by *Linnaeus* as the female flower of this moss, but *Haller* is of opinion that it is only the gem or origin of a new stalk, which frequently rises from its centre, and this again becomes sometimes proliferous.

minus β .

There are two varieties of this moss: the first has much shorter stalks than the preceding, and often branched; the leaves stiffer, erect, and more crowded, in other respects the same. *Vaill. Paris. t. 23. f. 6. & 7. Moris. hist. f. 15. t. 7. fig. 6. & 8. Dillen. musc. t. 54. f. 2. opt. Oed. Dan. t. 295.*)

The lesser Polytrichum. *Anglis.*

pilosum γ .

The other has a stalk scarcely more than half an inch high, terminated with a cluster of linear, erect, rigid leaves, for the most part entire on the edges, and tipp'd each with a white hair. The filament is about an inch high, and the capsule quadrangular. The female flower, or gem, is of a bright red colour. *Haller* makes this a distinct species. *Dillen. musc. t. 54. f. 3.*

Small hairy Polytrichum. *Anglis.*

The

The first kind, when it grows long enough for the purpose, is sometimes used in *England* and *Holland* to make brooms or brushes.

Of the female sort the *Laplanders*, when oblig'd to sleep in desert places, frequently make a speedy and convenient bed. Their manner of doing it is curious: Where this moss grows thick together they mark out, with a knife, a piece of ground, about two yards square, or of the size of a common blanket; then beginning at one corner, they gently sever the turf from the ground, and as the roots of the moss are closely interwoven and matted together, they by degrees strip off the whole circumscribed turf in one entire piece; afterwards they mark and draw up another piece, exactly corresponding with the first; then, shaking them both with their hands, they lay one upon the ground, with the moss uppermost, instead of a mattress, and the other over it, with the moss downwards, instead of a rug; and between them both take a comfortable nap, free from fleas and bugs, and without fear of contagious distempers.

It is probable they might take the hint of making such a bed from the bear, a cohabitant of their country, which prepares his Winter quarters with a large collection of this same moss.

~~NATURAL~~ 2.

POLYTRICHUM caule simplici, anthera erecta cylindrica. *Weis Crypt. p. 173.* MNIUM polytrichoides.

trichoides. Lin. Sp. pl. 1576. POLYTRICHUM *subrotundum*. var. β . Hudsf. Fl. Ang. 400. (Vail. Paris. t. 29. f. 11. Dillen. t. 55. f. 7. opt.)

Dwarf Polytrichum. *Anglis*.

In damp heathy places. XII-II.

The stalks are from a quarter to half an inch high, single, or rarely branched. The leaves are linear and obtuse, thick and rigid, finely serrated on the margins, and of a dark green colour. The filament is reddish, and about an inch high; the *anthera* nearly cylindrical, and without an *apophysis*; the powder green; the *calyptra* double, one within the other; the interior one smooth; the exterior short, wide and conical, composed of hairs only of a pale yellow, or whitish colour.

The female plants produce rosaceous or starry cups.

There is a variety of this with sessile or scarcely any stalks, with leaves quite entire, and *anthera* or capsules shorter, and consequently rounder. This is the P. *subrotundum* of Hudson's Fl. Ang. p. 400. Vail. Paris. t. 26. f. 15. Moris. hist. f. 15. t. 7. f. 7. Dillen. musc. t. 55. f. 6. opt.)

We chose to place this moss here rather than amongst the MNIA, because the hairy *calyptra* is a more obvious character, especially to a Tyro in the science, than the want of an *apophysis*.

POLYTRICHUM

- alpinum* 3 **POLYTRICHUM** caule ramosissimo, pedunculis terminalibus. *Sp. pl.* 1573. (*Dillen. musc. t. 55. f. 4. opt. Haller. hist. n. 1800. t. 46. f. 6. bona.*)

Alpine Polytrichum. *Anglis.*

Upon the highland mountains. VI-VII.

The stalk is about an inch and a half high, and branched. The leaves are narrow, linear-lanceolate, and finely ferrated. The filaments are about an inch long, tawny, and generally arise from the summits of the branches. The *anthera* is thick, oval, gibbous, and a little inclined or nodding. The *operculum* acuminate; the *calyptra* double, the outward one composed of hairs, the inward smooth and membranaceous.

- urnigerum* 4 **P.** caule ramosissimo, pedunculis axillaribus. *Sp. pl.* 1573. (*Vail. Paris. t. 28. f. 13. Dillen. musc. t. 55. f. 5. opt. Oed. Dan. t. 296. & fortasse t. 297.*)

Urn-headed Polytrichum. *Anglis.*

Upon the highland mountains in *Breadalbane*, and elsewhere frequent; and upon the *Pentland* hills, observ'd by Mr. *Falden*. VI.

The filaments in this arise out of the *axe* of the leaves, at the origin of the new branches. The *antheræ*, before they burst, are erect and cylindrical,

drical, but widest at the top. It has no *apophysis*.

The *operculum* is reddish, almost flat, and pointed in the centre. These characters are sufficient to render it a distinct species from the preceding. The *calyptra* is double, as in the other species. Hence it appears that the two-fold *calyptra* affords a new and excellent character of the genus, hitherto unnoticed by authors.

striatum 5. POLYTRICHUM caule ramoso, antheris subsessilibus sparsis, calyptris striatis sursumve pilosis. BRYUM *striatum*. Lin. Sp. pl. 1579 (*Dillen. musc. t. 55. f. 8. 9. 10 opt. Moris. hist. f. 15. t. 6. f. 13. Vail. Paris. t. 27. f. 10. Oed. Dan. t. 537. f. 3.*)

Striated Polytrichum. *Anglis.*

Upon trunks of trees, wooden pales, and rocks frequent. III.

The stalks are branched, and vary in height from half an inch to two inches, and are covered with lanceolate acute striated leaves. The filaments are extremely short, not longer than the *antheræ*, and are sometimes lateral, and sometimes terminal. The *antheræ* are erect and oval. The *calyptra* is single, conical, membranaceous, striated, tawny, and thinly covered with erect, and somewhat rigid hairs, which fall off in time, and leave the *calyptra* apparently striated. The *operculum* is yellow and pointed, and the rim of the *anthera*, when burst is radiated with triangular dents.

There

There is a variety of this, the leaves of which, when dry, are curled; the *anthera* at first of an inverted conical form, afterwards cylindrical; the *calyptra* yellow, and more hairy. *Vail. Paris. t. 27. f. 9. Dillen. musc. t. 55. f. 11. opt.*

The filaments, or peduncles, are generally shortest in those specimens which grow on rocks, and longest in those on trees.

The hairy *Calyptra*, though only a single one, affords so excellent a character to the young student, that we judged it more adviseable to range this moss under the genus of **POLYTRICHUM** than that of **BRYUM**, especially as we had the countenance of *Hudson*, *Scopoli*, and *Weis* for so doing.

MNIUM. *Gen. pl. 1193.*

Anthera operculata. Calyptra lævis. Fem. capitulum nudum pulverulentum remotum.

* *Capitulis femineis nudis.*

pellucidum **MNIUM** caule simplici, foliis ovatis. *Sp. pl. 1574.*
(Dillen. t. 31. f. 2. Haller. hist. n. 1853. t. 45. f. 8. bona. Oed. Dan. t. 300.)

Pellucid Mnium. Anglis.

In moist shady places, and upon decay'd roots of trees. IV.

The stalks are red, fuscous and downy at the root, generally single, and about an inch high. The leaves are oval-acute, pellucid, of a shining green colour, with entire edges, and a red nerve,

the whole reddish in decay. They grow alternate, and are thinly set in a quadrangular order. Some of the stalks are almost naked near the top, but terminated with a radiated crown of oval-acute leaves, having minute fuscous globules in the centre, which, magnified, appear to be composed of extremely small reddish brown leaves. These are supposed by *Linnaeus* to be female fructifications; by *Haller*, to be the gem or origin of a new plant, or branch.

Other stalks are terminated with a pale filament, or peduncle, of about an inch long, having an erect, cylindrical, tawny *anthera*, or capsule, covered with a smooth, long, subulated *calyptra*, yellow at the top, white and lacerated at the base. The *operculum* is red, conical, pointed, and often bifid; the rim edged with long *cilia*.

These are looked upon by *Linnaeus* as the *Anthera*, or male parts of fructification; by *Haller* as capsules, containing within them the various invisible parts of fructification, and so corresponding in some measure to the fleshy receptacle of a fig, which encloses within it all the flowers of that tree.

The above *antheræ*, or capsules, are rarely found.

androgynum 2. MNIMUM caule ramoso androgynum. *Sp. pl.* 1574. (*Dillen. musc. t. 31. f. 1. bona. Vaill. Paris. t. 29. f. 6. bona. Mich. Gen. t. 59. f. 8. H. K. e. Oed. Dan. t. 299. opt.*)

Little globular-headed Mnium. *Anglis.*

At

At the roots of trees in moist sandy woods in *Scotland*, but often on dry shady banks by the sides of heaths in *England*. III. IV.

The stalks grow erect, and crowded together, an inch, and sometimes two inches, high; often single, but generally branch'd. The leaves are thick set, of a short, narrow, lanceolate form, but not acute, of a yellowish green colour, with a thick green nerve in the middle of each, patent when moist, but curled and press'd to the stalk when dry.

At the summits of the branches are naked green peduncles, from 1-8th to 1-4th of an inch long, terminated each with a dark green minute pulverulent head, which, when magnified, appears granulated, and resembles the globular head or *germina* in the flower of a *ranunculus*. These are the supposed female fructifications.

From the tops of some of the branches of the same individual stalks which produce the above pulverulent heads, arise sometimes, but very rarely (according to *Dillenius*) erect peduncles, longer than those of the preceding, and terminated with oblong *antheræ*, at first erect, smooth and green, afterwards reddish, striated, and a little inclin'd; covered with a *Calyptra*, tawny at the top, and white towards the base. The *Operculum* is conical; the rim ciliated.

These *antheræ* we have never yet been able to discover.

palustre 3. **MNIUM** caule dichotomo, foliis subulatis. *Sp. pl.* 1574. (*Moris. hist. f. 15. t. 6. f. 9. Dillen. musc. t. 31. f. 3. opt.*)

Marsh Mnum. *Anglis.*

In bogs frequent. V-VII.

The stalks grow erect, from two to four inches high, bifid, and often dichotomous, covered between the leaves with a fuscous spongy down. The leaves are lanceolate, acute, divided by a thick nerve, and are of a yellowish green colour.

The branches of many of the older plants are terminated with a wide stellated crown of leaves, in the centre of which is a cluster of minute reddish dust-like scales. Some of these stellated crowns are found proliferous, producing often two or three short new pale stalks, about 1-4th of an inch high, naked towards the top, and terminated each with a minute scaly head.

Other distinct plants, of the same species, have tawney red filaments, an inch and a half long, arising from the *alæ* of the branches, and bearing each a striated *anthera*, slightly inclined. The *operculum* is short, conical and pointed. The *calyptra* subulate, the rim ciliated.

** *Stellis femineis foliosis.*

fontanum 4 **MNIUM** caule simplice geniculis inflexo. *Sp. pl.* 1574. (*Moris. hist. f. 15. t. 6. f. 8. Micheli. t. 59. f. 4. Pluk. alm. t. 47. f. 6. Dillen, musc. t. 44. f. 2. opt. Oed. Dan. t. 298.*)

Fountain

Fountain Mnium. *Anglis.*

In bogs, and on the borders of cold springs frequent. VII. VIII.

This elegant moss is from two to four inches high; the stalks are simple at the base, and covered with a rusty down, but higher up are red, and divided into several round, single, taper branches, which proceed nearly from the same point. The leaves are not more than 1-12th of an inch long, lanceolate and acute, of a whitish green colour, and so thinly set that the red stalk appears between them. The filaments are two inches long, red, and arise from the *alæ* of the branches. The *antheræ* are thick, striated, gibbous, nearly globular, a little inclined, of a greenish colour, tinged with red or brown. The *Operculum* is short and conical.

Some other stalks are terminated with a radiated *calyx*, consisting of five or six leaves, surrounding a dusty orange-colour'd disc; which *Haller* affirms to be the origin of the future branches, into which the stalk will be divided.

This moss, as it may be seen at a considerable distance, is a good mark to lead to the discovery of clear and cold springs. *Linnaeus* informs us, that the *Laplanders* are well acquainted with this sign. *Flor. Lap. p. 322.*

hygrometri- MNIUM acaule, anthera nutante, calyptra reflexa
cum 5. tetragona. *Sp. pl. 1575. (Moris. hist. f. 15. t. 7. f. 17.*

CRYPTOGAMIA MUSCI.

f. 17. Vaill. Paris. t. 26. f. 16. Dillen. musc. t. 52. f. 75. opt.)

Yellow bulbed *Mnium*. *Anglis.*

In woods, gardens, by road-sides, and upon walls.
I-V.

The leaves are oval-acute, of a shining yellowish green colour, and connive together into the form of a scaly bulb; from the centre of which arises a yellowish filament, about an inch and a half long, bearing a pear-shap'd, or inverted conical nodding *anthera*. The filament, at its first appearance, is erect and whitish, and the *calyptra* straw-colour'd, quadrangular, and pyramidal. When more advanced that and the *anthera* nod, and the *calyptra* becomes lateral and spoon-shap'd, or broad at the base, and acuminate at the top. The *operculum* is obtuse, with a red annular border.

The filaments in dry weather are erect, and do but slightly nod, but in wet weather are reflexed and twisted; and *Linnaeus* informs us, that if a dry sapless filament be drawn between moist fingers, from the base half way upwards, the *anthera* will be instantly reflexed; but if the same be drawn from the *anthera* half way downwards, it will be twisted aside; so that this moss has the properties of an hygrometer.

About *February* and *March* some of the plants have their leaves formed into a stellated *calyx*, having a small red disc in the centre, which constitutes this moss a *Mnium*.

MNIUM.

annetinum
6.

MNIUM foliis ovatis acuminatis pellucidis, pedunculis subradicalibus, anthera nutante. *Sp. pl.* 1576. (*Dillen. musc. t. 50. f. 68.*)

Lancet-leav'd pendulous Mnium. *Anglis.*

In woods and moist shady places. IV-V.

The stalks are about an inch high, sometimes single, but generally divided at the base into three or four younger branches, which grow out of the last year's decay'd shoot. The base of the stalk, or the old shoot, is covered with a fuscous spongy down; the upper part is red and smooth. The leaves are oval, acuminate, pellucid, quite entire on the edges, divided in the middle by a nerve, and alternately and thinly set.

The filament is about an inch high, red, and arises out of the last year's shoot, at the base of the branches. The *antheræ* are of an oblong oval form, and pendulous. The *operculum* is short, conical, and obtuse.

Some of the stalks are terminated with a large stellated *calyx*, having a small hairy disc.

Other stalks resemble runners, and are barren and creeping.

hornum 7.

MNIUM antheris pendulis pendulis, pedunculo curvato, furculo simplici, foliolis margine scabris. *Sp. pl.* 1576. (*Michel. gen. t. 59. f. 2 bona. Vaill. Par. t. 24. f. 4 & 5. Dillen. musc. t. 51. f. 71. opt.*)

Swan's

Swan's Neck Mnium. *Anglis.*

In woods and moist shady places. V.

The stalks are from one to two inches high, generally simple, but sometimes shooting out tender red branches, which, magnified, appear like the young twigs of a willow. The roots are covered with a rusty down. The leaves are 1-6th of an inch long, lanceolate, acute, pellucid, divided by a nerve, and appear finely serrated on the edges, if view'd thro' a magnifier.

The filament is from one to two inches long, of a shining tawny colour, and arises out of the summit of the stalk; at first erect, but afterwards curved like a swan's neck. The *anthera* is oval and pendulous, at first green, but reddish when ripe. The *operculum* is short, obtuse and whitish. The rim of the *anthera* ciliated.

Some of the stalks are terminated with a stellated cup, surrounding a red granulated disc, which is the origin of a future shoot.

This moss may be readily distinguished from the preceding by its size, and the serratures on the edges of the leaves.

crudum 8. MNIMUM antheris pendulis, calyptra recurvata, foliis pellucidis. *Sp. pl.* 1576. (*Dillen. musc. t.* 51. f. 70.)

Tender spear-leav'd Mnium.

In woods and moist shady places in the lowlands.

Dr. Burgefs. V.

The

The stalk is red, about half an inch high, or a little more; the leaves grow alternately round the stalk, of a pale green colour, tender, pellucid, and entire on the edges; the lower ones oval and acute, the upper ones narrow and lanceolate, all having a fine nerve running along the middle.

The filament arises from the top of the stalk, of a pale red colour, about half an inch long. The *anthera* is oblong and pendulous, smallest at the base, broadest at the end, green at first, but reddish when ripe. The *calyptra* is pale green and recurved. The *operculum* is short, reddish, and obtuse; the rim ciliated.

It is very nearly related to the *MNIUM hornum*, but differs from it in having entire leaves, as well as being a shorter and smaller moss.

We have never yet seen any of the stalks terminated with a stellated *calyx*; nor does *Dillenius* mention any such; but as the plant is very like the *M. hornum*, which is known to have them, we have ventured, with *Linnaeus*, who may probably have seen them, to place it among the *MNIUMS*.

Serpyllifolium
9.

MNIUM pedunculis aggregatis, foliis patentibus pellucidis. *Sp. pl.* 1577. (*Vaill. Paris. t.* 26. f. 5. & 18. *Dillen. musc. t.* 53. f. 81. opt.)

Thyme-leaved Mnium. *Anglis.*

In woods and moist shady places frequent. IV.

The

punctatum The roots are covered with a rusty down. Some of the stalks are long, prostrate, and creeping, like runners, thinly beset with alternate oval or roundish leaves; others are erect and shorter, having a few small leaves towards the base, and a cluster of large ones at the top; all of which are of a fine green pellucid shining colour, divided by a red nerve, and surrounded with a cartilaginous red margin, waved on the edges, but not serrated, and, if viewed through a magnifier, the upper surface curiously dotted or reticulated.

The filaments, or peduncles, arise out of the tops of the stalks, often singly, but sometimes two, three, or four together, from an inch to two inches high, erect, strong, and of a yellowish red colour, furnished with an oblong red tubercle at their base. The *anthera*, or *capsule*, is oval and pendulous; the *operculum* acuminate; the *calyptra* long, subulate and white; the young capsules erect.

Some of the stalks are terminated with a rosaceous *caryx*, consisting of five or six broad leaves, surrounding a granulated fuscous disc.

Of this moss there are several varieties, some of which many authors consider as distinct species.

The first has oval-lanceolate, acute leaves, serrated on the edges, and peduncles in clusters. *Dillen. t. 53. f. 79.*

The

proliferum. The second has oval-lanceolate, acute, leaves, with margins either entire, or so finely serrated as to be invisible without a magnifier. These leaves grow in rosaceous clusters, surrounding the stalk in different places, and at last terminating it, so that the stalk is proliferous. The peduncles grow sometimes singly, and sometimes in clusters. See *Dillen musc.* t. 52. f. 77.

undulatum δ The third has simple and proliferous stalks, linear-elliptic leaves, undulated, and finely serrated on the margins, and peduncles in clusters. *Vail. Paris.* t. 24. f. 3. *bona. Michel. gen.* t. 59. f. 5. *Dillen musc.* t. 52. f. 76.

This is by much the largest of all the *Mniums*, the stalks being often five or six inches long.

triquetrum. **MNIUM** foliis trifariis patulis subulato-lanceolatis carinatis. *Sp. pl.* 1578. (*Vail. Paris.* t. 24. f. 2. *Moris. hist.* f. 15. t. 6. f. 20. *Dillen. musc.* t. 51. f. 72, 73, opt.)

Pendulous Bog Mnium. *Anglis.*

In boggy places by the sides of rivulets. We observed it in the way from *Drumlanrig* to the *Lead-bills*, and Mr. *Falden* on the *Pentland* hills, &c. V.

The stalks vary from one to three inches in height, are covered with rusty down about the base, and throw out new shoots from the stellated summits of the last year's growth. The leaves are lanceolate, acute, carinated, entire on the edges, and

and thinly set, especially on the new shoots, which appear smooth and red between them. The peduncles arise from the tops of the old stalks, at the base of the new ones. erect, of a tawny red colour; when young an inch high, but when full grown often three inches, and upwards. The capsules are at first green, elliptical, and pendulous; when ripe tawny and pear-shap'd, and when burst nearly erect, or slightly nodding. The *calyptra* is reddish, the *operculum* short, whitish, and conical, The rim of the orifice has short cilia.

Some of the stalks are terminated with a stellated *calyx*, having a granulated disc in the centre.

The long peduncles, tumid pendulous capsules, and place of growth, readily distinguish this species.

It varies sometimes with leaves of a reddish colour, especially so in the nerves and on the edges.

BRYUM. Gen. pl. 1194.

Anthera operculata. Calyptra lævis.

Filamentum e tuberculo terminali ortum.

Stella feminea nulla in distincto individuo.

* *Antheris sessilibus.*

apocarpum BRYUM antheris sessilibus terminalibus, calyptra
1. minima. Sp. pl. 1579. (Vail. Paris. t. 27. f. 15.
bona. Dillen. musc. t. 32. f. 4. ♂ ejus. var. fig. 5.
Oed. Dan. t. 480. opt.)

Red-

Red-headed Bryum. *Anglis.*

Upon rocks frequent, and sometimes upon trees.

I-III.

The stalks are about an inch high, erect and branched, beset around with numerous, small narrow lanceolate leaves, of a fuscous green colour, terminated with a short hair. The *antheræ* are short, cylindrical, sessile, and grow out of the summits of the branches, almost hid by the leaves, green at first, but reddish when ripe. The *operculum* is of a bright red colour, pointed in the centre.

** *Antheris pedunculatis erectis.*

BRYUM antheris erectis sphaericis. *Sp. pl.* 1580.

(Moris. hist. f. 15. t. 6. f. 6. Vail. Paris. t. 24. f. 9 & 12. Dillen t. 44. f. 1. opt.)

pomiforme 2

Globe-headed Bryum. *Anglis.*

Upon rocks and banks frequent, as upon the hills in the King's park at *Edinburgh*, &c. III.

The stalks are about an inch high, covered with rusty down at the base; the young ones single, the older ones branched. The leaves are numerous, very narrow and lanceolate, nearly fetaceous, and of a yellowish green colour. The peduncles are terminated with erect globular capsules, of a yellowish green colour at first, but brown and striated when ripe. The *operculum* is obtuse, and almost pellucid, not placed vertically, but a little on one side of the capsule. The *calyptra* is small, subulate, and white. It is an elegant moss, and easily discovered by its spherical capsules.

BRYUM

pyriforme 3 BRYUM antheris erectis obovatis, calyptra subulata, furculis acaulibus, foliis ovatis muticis. *Sp. pl.* 1580. (*Moris. hist. f.* 15. t. 7. f. 16. *Vail. Paris. t.* 29. f. 3. *Dillen. musc. t.* 44. f. 6. *opt. Oed. Dan. t.* 537. f. 1.)

Pear-headed Bryum. *Anglis.*

On banks and clayey soils, but not common. III.

The leaves are oval-lanceolate, and grow sessile upon the ground, in a rose-like cluster, of a pale green colour. The peduncle arises from the centre of the leaves, of the same colour, hardly half an inch high, bearing a thick, erect, inverted, conical, or pear-shap'd capsule, of a pale green at first, but tawny when ripe. The *operculum* is short, conical, and obtuse; the rim of the orifice without *cilia*; the *calyptra* at first is erect and quadrangular, but as the capsule swells, it bursts at the base, and becomes lateral.

extinctori- BRYUM anthera erecta oblonga minori, calyptris
um 4. laxis æqualibus. *Sp. pl.* 1581. (*Vail. Paris. t.* 26. f. 1. *bona. Dillen. musc. t.* 45. f. 8. ♂ *var. caule. ramoso fig. 9. opt.*)

Extinguisher Bryum. *Anglis.*

Upon rocks not unfrequent, as in *Edinburgh park*, &c. I. II.

The stalks are single and very short, hardly half an inch high; the leaves are oval-lanceolate, divided

vided by a nerve, and collected into a starry cluster at the top of the stalk, from the centre of which arises a yellow peduncle, half an inch high, bearing a short green cylindrical capsule, with a long-pointed *operculum*, totally covered with a very remarkable large, straw colour'd, erect, transparent, membranaceous *calyptra*, near a cylindrical figure, but pointed at the top, and hanging loosely over, lower than the capsule, like an extinguisher upon a candle, and ciliated at the base.

- β. There is a large variety of this, with branched stalks, an inch high, covered with rusty down at the base, but in other respects similar. *Dillen. t. 45. f. 9.*

subulatum 5 BRYUM antheris erectis subulatis, furculis acaulibus. *Sp. pl. 1581. (Vail. Paris. t. 25. f. 8. bona. Dillen. musc. t. 45. f. 10. opt.)*

Subulated Bryum. *Anglis.*

In shady woods, and in damp hollow glens, and fissures of rocks, but not common. III.

The leaves are lanceolate, acuminate, and expanded, and grow in a star-like and almost sessile cluster; from the centre of which arises a firm yellowish peduncle, about an inch high, bearing a remarkably long, curv'd, cylindrical, subulated capsule, of a yellowish green colour, covered with a sharp-pointed yellow *calyptra*, adhering close to the capsule. The *operculum* is long, conical, and surrounded with an orange-colour'd

colour'd ring at the base, when the capsule is ripe.

rurale 6. BRYUM antheris erectiusculis, foliis piliferis recurvis. *Sp. pl.* 1581. (*Vail. Paris. t.* 25. *f.* 3. *bona. Dillen. musc. t.* 45. *f.* 12.)

Hoary rustic Bryum. *Anglis.*

On the North or West side of thatch'd cottages frequent, and sometimes on walls and trunks of trees. III. IV.

The stalks grow in tufts or patches, erect, branch'd and two inches high; the leaves are broad, lanceolate, acute, and terminated with a white hair; when fresh and moist, they are of a yellowish green colour, expanded and recurved at the points; but, when dry, they are contracted, and of a fuscous green colour. The peduncles are of a pale red, about an inch high, and arise either out of the summits of the young branches, or a little below out of the one-year-old ones, having a green naked conic bulb at their base. The capsules are erect, cylindrical, and of a reddish brown colour. The *operculum* is long, conical, and a little incurved. The *calyptra* tawny, and erect at first, afterwards incurved and fuscous. The rim of the orifice has long *cilia*.

murale 7. BRYUM antheris erectis, foliis piliferis rectiusculis, furculis simplicibus cœspitosis. *Sp. pl.* 1581. (*Vail.*

(*Vail. Paris. t. 24. f. 15. bona. Dillen. musc. t. 45. f. 14. opt.*)

Wall Bryum. *Anglis.*

Upon houses, walls, and rocks common. III.

This grows in convex tufts, the stalks sessile and simple, or very slightly branched; the leaves are oval-lanceolate, concave, terminated with a white hair, and grow in a star-like expanded cluster. The peduncles are about an inch high, of a tawny yellow colour; the capsules are erect, nearly cylindrical, green at first, but reddish brown when ripe. The *operculum* is conical and subulated; the *calyptra* fuscous, acute, lateral, and a little incurv'd. The rim of the orifice saffron-colour'd, and ciliated with long hairs, twisted when dry.

β. There is a variety of this, the leaves of which have no hairs at the point. See *Vail. Paris. t. 24. f. 14. & tab. 25. f. 4. Dillen. musc. t. 45, f. 15.*)

Scoparium 8 BRYUM antheris erectiusculis, pedunculis aggregatis, foliis secundis recurvatis, caule declinato. *Sp. pl. 1582. (Vail. Paris. t. 28. f. 12, bona: Dillen musc. t. 46. f. 16. opt.)*

Broom Bryum. *Anglis.*

In woods and heaths frequent. IV-VII.

The stalks vary from one to four inches in height, are branched, and nearly erect at the base, but bent higher up at the angles of the branches;

A a a

covered

covered with a fuscous down about the lower part, and generally grow in large tufts; the leaves are linear and acute, one third of an inch long, recurv'd or falcated, lean all on one side of the stalk, and are of a yellowish colour.

The peduncles are one or two inches high, strong, and of a yellowish colour, arising near the base of the new branches, generally single, but sometimes two, three, or four from the same point. The capsules are cylindrical, a little incurved, and striated. The *operculum* is furnish'd with a red beard or point, almost as long as the capsule. The *calyptra* is long, pale, and falcated.

At the bottom of the peduncle is a bulb or *Perichætium*, scaly or foliaceous at the base; which determined *Haller*, *Scopoli*, *Weis*, &c. to place this moss amongst the *Hypnum*s, but as this bulb in the upper part is naked and without scales, *Linnaeus* has thought fit to retain it amongst the *Bryum*s; so nearly are the two genera allied.

undulatum

9.

BRYUM antheris erectiusculis, pedunculis subso-
litariis, foliis lanceolatis carinatis undulatis pa-
tentibus ferratis. *Sp. pl.* 1582. (*Vail. Paris. t.*
26. f. 17. folia malè, Capsulae benè. Dillen. t. 46.
f. 18. benè. Oed. t. 477. opt.)

Curled Bryum. *Anglis.*

In shady places, and in woods about the roots of trees frequent. XII-I.

The

The stalks are erect and simple, from one to three inches high. The leaves are large, linear-lanceolate, waved, finely serrated on the edges, of a dark green colour, patent when moist, but greatly curled when dry.

The peduncles arise from the summits of the stalks, one or two inches long, generally single, sometimes two together, red at the base, yellowish at the top. The capsules are of a dark red colour, cylindrical and incurved. The *operculum* has a red ring at the base, and is terminated with a long extended point, often a little recurved. The *calyptra* is long, conical, and whitish. The *cilia* are connected to a central membrane, as in the *Polytrichum commune*.

glaucum 10 BRYUM antheris erectiusculis, sperculo arcuato, foliis erectis imbricatis, furculis ramosis. *Sp. pl.* 1582. (*Moris. hist. f. 15. t. 6. f. 22. sine pedunculis. Vail. Paris. t. 26. f. 13. non. benè. Dillen. musc. t. 46. f. 20. opt.*)

White brittle Bryum. *Anglis.*

In open moorish heaths frequent. 4. IX.

The stalks are crowded together in thick matted tufts, from one to four inches high, single at the base, but divided into short, cylindrical branches towards the top, closely imbricated all around with remarkably brittle, greenish white, narrow, subulate, erect leaves.

The peduncles arise singly from the summits of the branches, out of a cylindric scaly bulb, or *perichætium*, and are hardly an inch high, fine and slender. The capsules are small, oval, and, when old, a little inclined. The *operculum* is conical, and has a long point.

This moss is readily distinguished by its forming white tufts, something like the *SPHAGNUM paustre*, but the capsules are rarely to be found.

pellucidum BRYUM antheris erectiusculis, foliis recurvis acutis, caule hirsuto. *Sp. pl.* 1583. (*Dillen. musc. t.* 46. f. 23. & f. 24.)

Pellucid Bryum. *Anglis.*

In bogs and by the sides of lakes. VII.

The stalk is red, nearly erect, from one to three inches high, sometimes simple, and sometimes they are branched, and covered at the base with a fuscous down. The leaves are thinly set, in alternate order, of a short lanceolate figure, pellucid, patent, acute, recurved at the point, the upper ones green, the lower ones of a pale fuscous colour.

The peduncles are short and fine, and arise either from the summits, or the base of the new branches. The capsules are small, oval, of a dark brown, or blackish colour, and a little inclin'd, but are rarely to be found. When dry they turn fuscous.

articulare
12.

BRYUM antheris erectis, operculo aciformi, foliis erectis subsecundis. *Sp. pl.* 1583. (*Dillen. musc. t.* 46. *f.* 25.)

Sharp-headed mountain Bryum. *Anglis.*

Upon moist rocks by the sides of rivulets, in the highlands and lowlands, frequent. VIII.

The stalks are an inch, or an inch and a half high, erect and branched, every where densely imbricated with short, lanceolate, dark green, or olive-colour'd leaves, slightly leaning one way.

The peduncles are near an inch high, of a dark red colour; the young ones arise out of the summits of the new branches, the older ones, from the sides, out of the last year's shoots.

The capsules are oblong, quite erect, and covered with a sharp-pointed *operculum*. The *calyptra* is pale brown and acute; the rim of the orifice without cilia.

flexuosum
13.

BRYUM antheris erectis, foliis fetaceis, pedunculis flexuosis. *Sp. pl.* 1583. (*Dillen. musc. t.* 47. *f.* 33.)

Waved shank'd Bryum. *Anglis.*

We gathered this only once, on *Crawford* moor, near the *Lead-hills*, on the confines of *Lanerkshire*. VI.

The stalks are about an inch high, very slender, erect, single, or but slightly branched, and covered with a fuscous down at the base. The leaves are fetaceous, or of a narrow linear-lanceolate

ceolate form, like hairs, very numerous, and of a yellowish green colour, generally erect, but sometimes turning one way.

The peduncles are very slender, green at first, but yellowish afterwards, and are remarkably waved or full of flexures. The capsules are small, oblong, and terminated with a red pointed *operculum*. The *Calyptra* is white and pointed; the rim of the orifice ciliated. The peduncles arise from the summits of the stalks, generally single, but sometimes two or three together.

We suspect this moss to be only a variety of the following, the flexures of the peduncles being probably accidental.

beteromale-
lum 14.

BRYUM antheris erectis, foliis setaceis secundis.
Sp. pl. 1583. (*Vaill. Paris. t.* 27. *f.* 7. *Dillen. musc. t.* 47. *f.* 37. *bon. Oed. Dan. t.* 479. *opt.*)

Bending Hair Pencil Bryum. *Anglis.*

In moors and at the roots of trees. V.

The stalks vary from half an inch to an inch in height, erect, simple, or slightly branched, and surrounded with numerous capillary or setaceous hairs, of a fine green colour, leaning all one way. The peduncles are yellowish, and have a small bulb at their base. The capsules are erect and more oval than the preceding. The *operculum* is red and pointed.

BRYUM

laterale 15. BRYUM antheris erectis lateralibus, foliis setaceis subsecundis. (*Haller. Iter. Helvet. p. 269. n. 55. tab. 1. bon. Hist. stirp. Helvet. n. 1802. t. 46. f. 8, lente acutà. Oed. Dan. t. 538, f. 3.*)

Lateral Bryum. *Anglis.*

In shady woods by the sides of the highland mountains, and by the sides of rivulets in the fir forests. V.

The stalks are erect, an inch high or more, and grow in bright green tufts, a little recurved at the top, covered with a fuscous down at the base, and surrounded with numerous soft capillary leaves, sometimes erect, but generally leaning a little to one side. The peduncles are red, very short, about 1-6th of an inch long, and arise singly, or two or three above one another, from the side of the stalk, out of the *alæ* of the leaves, having a small bulb at their base. The capsule is erect, large, short, cylindrically oval, striated, and of a cinnamon colour. The *operculum* is short, conical and red. The orifice ciliated with red hairs. The *calyptra* pale, acute, and visible only while the capsules are young.

tortuosum 16. BRYUM antheris erectis, foliis setaceis imberbibus, arefactione retortis. *Syst. nat. edit. 13. p. 798. Sp. pl. 1583. (Haller. hist. Helvet. t. 45. f. 2. Dillen. musc. t. 48. f. 40. opt.)*

Frizzled Bryum. *Anglis.*

On

On the highland mountains, and in woods. IX.

The stalks are from one to two inches high, branched, and growing in tufts. The leaves are long, narrow, lanceolate, or almost subulate, densely imbricated, erect, or slightly incurved in the young and moist plant, but greatly curled or frizzled in the old and dry ones, and of a yellowish colour, with a mixture of dull green. The peduncles arise either from the summits or the sides of the upper branches, either of a pale or of a reddish yellow colour, about an inch high, having a small bulb at the base. The capsule is erect, oblong, and nearly cylindrical; the *operculum* conical, and red at the base, with a long claw-like point; the orifice ciliated with long, red, twisted hairs; the capsules yellowish green, and brown when ripe; the rim of the orifice is smooth, and without *cilia* in such capsules as have been long burst.

It varies with leaves but little curled even in the dry specimens.

cirratum 17

BRYUM antheris erectis, foliis stellatis arefactione revolutis. *Huds. Fl. Ang.* 409. MNIUM *cirratum*. *Sp. pl.* 1576. (*Dillen. musc. t.* 48. *f.* 42. & *var. fortassè major f.* 41.)

Star-topp'd Frizzled Bryum. *Anglis.*

In woods frequent. IV.

This greatly resembles the preceding, but is smaller and about half an inch high. The leaves are yellowish

yellowish green, and in the fresh plant are stellated at the top, which induced *Linnaeus* to place it among the MNIUMS, but they have no granulated disc in the centre. In the dry plant they are curled or frizzled. The peduncles are more copious, the capsules shorter and more oval, of a dark fuscous colour when ripe. The *cilia* short.

At the base of the peduncle is a small bulb, which occasion'd *Haller* to rank this moss with the HYPNUMS, but the bulb is not scaly.

setaceum 18 BRYUM antheris erectis, operculis filiformibus longitudine antherarum. *Huds. Fl. Ang. p. 409.*
MNIUM *setaceum*. *Lin. Sp. pl. 1575.* (*Dillen, musc. t. 48. f. 44.*)

Pale star-topp'd Bryum. *Anglis.*

Upon walls and rocks. III. IV.

The stalks are half an inch high, branched at top, and grow in yellowish or pale green tufts. The leaves are loosely imbricated, patent, lanceolate, acute, terminated with a short hair, and grow in a barren star at the top of the branches. The peduncles arise from the base of the branches, out of the last year's shoots, an inch high, very slender, at first of a pale green, at last of a shining tawny red colour, with a small bulb at their base. The *capsules* are erect, slender, cylindrical, at first green, but dark fuscous and shining when ripe. The *operculum* is acute, fuscous when ripe, and nearly as long

as the capsule. The *calyptra* is erect, thin, and fuscous in the young specimens, but oblique in the older ones. The rim of the capsule has very short *cilia*.

The stalks are sometimes found an inch high.

*truncatu-
lum* 19.

BRYUM antheris erectis subrotundis, operculo mucronato. *Sp. pl.* 1584. (*Moris. hist. f.* 15. *t.* 7. *f.* 18. *Vail. Paris. t.* 26. *f.* 2. *Dillen. musc. t.* 45. *f.* 7. *opt.*)

Short brown-headed Bryum. *Angliis.*

In woods and on banks, in a clayey soil. II.

This is one of the least of the moss-tribe. The stalks are single, hardly a quarter of an inch high, grow in tufts or patches, and are terminated with a little rose, or star, of oval-lanceolate, acute, shining green leaves, divided by a nerve, which ends with a short hair, invisible by a microscope.

The peduncle arises from the centre of the star, of a tawny colour, hardly a quarter of an inch high, terminated with an erect, short, thick, oval capsule, fuscous when ripe. The *operculum* has a claw-like point in the centre, and is covered with a pale *calyptra*. When the *operculum* falls off, the capsule appears remarkably truncated, with a wide orifice, destitute both of ring and *cilia*.

BRYUM

viridulum
20.

BRYUM antheris erectis ovatis, foliis lanceolatis acuminatis imbricato-patulis. *Sp. pl.* 1584. (*Vail. Paris. t.* 29. *f.* 5. *Dillen. musc. t.* 48. *f.* 43.)

Little green Bryum. *Anglis.*

On shady banks, by road-sides, and in woods. III.

This minute moss is about 1-6th of an inch high, and grows in green tufts, or would scarcely be visible. It is simple, or very slightly branched. The leaves are lanceolate and acute, but so very narrow that they may be term'd capillary. Their points, when dry, are curled.

The peduncles arise from the centre of the leaves, of a pale green, about a quarter of an inch high, with oval erect capsules, of a yellow fuscous colour. The *operculum* is pointed, the rim ciliated, the *calyptra* acute.

paludosum
21.

BRYUM acaulon, foliolis fetaceis, antheris obtusissimis patulis. *Sp. pl.* 1584. (*Dillen. musc. t.* 49. *fig.* 53.)

The least dwarf Bryum. *Anglis.*

Upon moist rocks, and sometimes upon decay'd wood in damp shady places. IV.

This is the smallest of all the *Bryums*, and would be hardly distinguishable if it did not grow in clusters. It differs from the preceding in not being more than half so large, the leaves finer, of a darker green, and not curled at the ends when dry; but chiefly in having lesser and more obtuse

obtuse capsules, of a blackish brown colour, with a wide orifice.

hypnoides
22.

BRYUM antheris erectis, caule erectiusculo, ramis lateralibus brevibus fertilibus. *Sp. pl.* 1584. (*Moris. hist. f.* 15. *t.* 5. *f.* 7. *Haller. hist. n.* 1780. *t.* 46. *f.* 4. *Dillen. musc. t.* 47. *f.* 32. *Et ejus varietates f.* 31, 27, 28, 29, 30. *Et t.* 46. *f.* 26. *Oed. Dan. t.* 476.)

Hoary alpine Bryum. *Anglis.*

Upon the mountains and rocks in the highlands and lowlands abundantly. X.

The stalks are nearly erect, varying from one to six inches high, and grow often in large tufts, or cushions. They are sometimes single, but are usually divided into a few large branches, which shoot out many short, alternate, smaller ones from their sides, which are thickest at the ends. The leaves are narrow, lanceolate, acute, terminated with a long white hair, and everywhere surround the stalks; the older ones fuscous, the young ones of a yellowish green colour, growing in a thick cluster at the extremities of the branches, and often slightly bending to one side.

The peduncles are erect, yellowish, about a quarter of an inch long, and arise out of a pale conic *perichatium*, or bulb, near the extremities of the lesser lateral branches. The capsules are erect, oval, and brownish. The *operculum* red, with a long point. The orifice ciliated; in some specimens with long red hair.

It

It varies with leaves of a darker green colour, tipped either with longer or shorter hairs, and sometimes has no hairs at all. It is found also with wider leaves, recurved at the point, and more or less densely imbricated, whence the variety of figures given by *Dillenius*.

verticillatum 23.

BRYUM antheris erectis, pedunculis ficcitate contortis, foliis piliferis, furculis, fastigiatis. *Huds. Fl. Ang.* p. 411. var. β . sed an *B. verticillatum* *Lin. Sp. pl.* 1585. dubium est. (*Dillen. musc. t.* 47. f. 34. *plantæ nostræ benè respondet.*)

Green-pointed Bryum. *Anglis.*

On the sides of the highland mountains in *Breadalbane*, on *Ben-Lomond*, &c. X-V.

The stalks grow in tufts, are an inch high, erect, slender, divided into two or three, and sometimes half a dozen upright branches pointed at top, and generally turned a little to one side.

The leaves every where surround the stalk, are very numerous, narrow, and setaceous, terminating in a fine slender point, without a hair.

They often incline a little to one side of the stalk. Those at the summits of the branches are of a deep green colour. The inferior part of the stalks, and all the lower leaves are fuscous.

The peduncles are reddish, very short, being not above a line or two higher than the top of the plant, and arise generally out of the summits of the inferior branches. The capsule is erect, short,

short, and roundish, green at first, fuscous when ripe. The *operculum* is reddish, with a broad base, and a short curved point in the centre.

Whether this be the *B. verticillatum* intended by *Linnaeus* is doubtful, but it certainly is that of *Dillenius*, to the figure of which I have referred. It is nearly related to the *B. heteromallum* above.

purpureum 24. BRYUM caule dichotomo, axillis pedunculiferis
anthera erecta, foliis carinatis. *Huds. Fl. Ang. p.*
412. MNIUM *purpureum*. *Lin. Sp. pl. 1575.*
(*Dillen. musc. t. 49. f. 51.*)

Purple Bryum. *Anglis.*

Upon walls, rocks, and in light gravelly soils frequent. IV. V.

The stalks are erect, from half an inch to an inch high, slightly branched towards the top, and grow in delicate green tufts. The leaves are subulate, patent, and form, at the summits of the branches, barren rosaceous stars. The peduncles are numerous, about an inch high, erect, of a bright red colour, visible at a considerable distance, and produced from the *axe* of the branches,

The capsules are oval, erect, and green, when young, but reddish, and a little inclin'd when ripe. The *operculum* is red, acute, and conical. The *calyptra* dull red, erect at first, but afterwards oblique.

*** *Antheris*

*** *Antheris nutantibus.*

argenteum
25.

BRYUM antheris pendulis, furculis cylindricis imbricatis lævibus. *Sp.* 1586. (*Vail. Paris.* 26. f. 3. *Dillen. musc. t.* 50. f. 62, & 63. *opt.*)

Silver Bryum. *Anglis.*

Upon houses, walls and rocks. XII. I.

The stalks are cylindrical, from half an inch to an inch long, of a silvery colour, and grow in clusters. The leaves are oval-lanceolate, acute, terminated with a hair, densely imbricated in a quadruple series, and so closely pressed to the stalk as not to be discern'd without a lens.

The peduncle is about half an inch, and arises at the base of the stalks, red at the bottom, pale at the top. The capsules are oval, nodding, and of a yellowish colour. The *operculum* is short, obtuse, and orange-colour'd. The rim of the orifice ciliated. The *calyptra* dark green, visible only on the young capsules, and soon afterwards deciduous.

The young stalks are green, but grow silvery with age.

pulvinatum
26.

BRYUM antheris subrotundis, pedunculis reflexis, foliis piliferis. *Sp. pl.* 1589. (*Vail. Paris. t.* 29. f. 2. *Dillen. musc. t.* 50. f. 65. *opt.* *Moris. hist. t.* 6. f. 21.)

Grey Cushion Bryum. *Anglis.*

Upon walls and tiled houses frequent. III. IV.

The

The stalks are half an inch long, branched, and crowded together in close, circular, convex, grey tufts. The leaves, when young or moist, appear lanceolate, carinated, nearly erect, of a yellowish green colour, terminated with a long hoary, waved hair. When dry they are much contracted, and hardly distinguishable but by their white hairs.

The peduncles are very short, and arise from the summits of the branches, of a pale yellow colour, erect at first, bearing capsules, covered each with a thin pale *calyptra*; but afterwards, when the capsules become turgid, the peduncles are curved or arched in such a manner, that the capsules are immersed, or buried, as it were, among the leaves. These capsules, when ripe, are globular, fuscous, finely striated, and covered with a short pointed *operculum*. The rim of the orifice is surrounded with small dents.

caespiticiu

27.

BRYUM antheris pendulis, foliis lanceolatis acuminato-setaceis, pedunculis longissimis. *Sp. pl.* 1586. (*Vaill. t. 29. f. 7. bona. Dillen. t. 50. f. 66. opt.*)

Pendulous matted Bryum. *Anglis.*

Upon walls, houses, and light gravelly soils. III.

The stalks are very short, slightly branched, and grow together in close, thick, matted, green, or reddish tufts. The leaves are small, oval-lanceolate, shining, terminated with a sharp beard, or hair, crowded together into a bulbous cluster

cluster in the young shoots, but stellated in the old ones.

The peduncles are about an inch long, erect, red at the base, pale or yellowish towards the top, and arise out of the summits of the last year's shoots, or at the base of the new shoots. The capsule is cylindrically oval or elliptical, pendulous and green, yellowish when ripe. The *operculum* is transparent, papillary, green at first, red and shining when ripe. The *calyptra* is thin erect, and fuscous in the young plants, oblique and red in the adult ones.

It varies with broader leaves, and with longer and shorter peduncles.

Haller ranks this moss among the *Hypnum*s, on account of the *vagina*, or *perichætium* at the base of the filament.

capillare 28 BRYUM antheris pendulis, foliis ovatis setiferis carinatis, pedunculis longissimis. *Sp. pl.* 1586. MNIUM *capillare*. *Syst. nat. edit.* 13. p. 796: (*Moris. hist. f.* 15. t. 6. f. 19. *Vail. Paris. t.* 24. f. 6. *Dillen. t.* 50. f. 67. opt.)

Capillary Bryum. Greater pendulous matted Bryum. *Anglis.*

In woods, heaths, and gravelly soils. IV.

This is extremely like the preceding in its whole habit, and perhaps is only a variety of it. It differs, however, in being larger in all its parts: the shoots or branches are longer; the leaves wider towards the extremity, of a fine green, and

more pellucid ; the capsules longer, and later in their appearance ; the *operculum* more acute.

Linnaeus, in his *Fl. Suec.* and 13th edition of the *Syst. nat.* has rank'd this amongst the MNIUMS, but we have never yet seen the granulated discs of the female fructifications, nor does *Dillenius* mention them, and therefore we judged it more easy for the student to retain this moss among the *Bryums*, especially as it is so nearly related to the preceding, which is received as a *Bryum* by *Linnaeus* himself.

Haller and *Weis* have placed it with the *Hypnum*s, as having a *perichætium* at the base of the peduncle.

alpinum 29 BRYUM anthera oblonga pendula, foliis ovatis acuminatis carinatis, turculis ramosis axillis pedunculiferis. *Syst. nat. edit.* 13 p. 799. *Huds. Fl. angl.* p. 415. (*Dillen. musc* 1. 50. f. 64.)

Red alpine Bryum. *Anglis.*

Upon the highland mountains, on rocks covered with little earth, as on *Ben Lomond*, &c. V.

The stalks are an inch and a half high, irregularly divided into longer and shorter branches, and grow together in tufts of a shining dark red colour, which distinguishes this moss at first sight. The leaves are very numerous, lanceolate, carinated, and grow all round the branches ; slightly patent in the moist plant, but erect and closely pressed to the stalk in the dry, so as to make that and the branches appear cylindrical, with pointed

pointed summits. The leaves are greenish in the young plants with a slight tinge of red, but at the top of the old branches of a shining dark red colour. The stalks at the base are fuscous.

The peduncles are red, an inch high, and arise out of the angles of the branches from the old shoots, having a red bulb or *perichæcium* at their base. The capsules are oblong, pendulous, obtuse, green when young, reddish when ripe. The *calyptra* is reddish, the *operculum* has a short obtuse point, and the ring is ciliated.

Obs. The tops of the branches in the dry plants are very like those of the common *Hypnum sericeum*, except in colour.

HYPNUM. *Gen. pl.* 1195.

Anthera operculata. *Calyptra* lævis.

Filamentum laterale ortum e perichætio.

* *Frondibus pinnatis.*

bryoides 1. HYPNUM fronde simplicissima pinnata lanceolata, apice pedunculifera. *Sp. pl.* 1588. (*Vail. Paris. t.* 24. *f.* 13. *bona, si non optima. Dillen. t.* 34. *f.* 1. *bona. Oed. Dan. t.* 473. *f.* 1.)

Little pinnated Hypnum. *Anglis.*

In woods and shady places. II-IV.

This is the least of all the *British* Hypnums. It consists of a single pinnated leaf, about a quarter of an inch long, several growing together, a little reclining. The *pinnae* are alternate, generally seven or eight pair, lanceolate, slightly curved,

curved, compressed at their base, and enfolding the middle rib, set nearest together at the top of the leaf, of a green but not shining colour.

The peduncle is reddish, about the same length as the leaf, and arises from between the uppermost *pinnae*, at the extremity of the middle rib, and nearly at right angles with it.

The capsule is erect, nearly oval, green at first, but of a reddish brown when ripe. The *operculum* is red, with an erect point in the centre. The *calyptra* is very thin, short, conical, and of a pale green colour. The rim of the orifice is ciliated with reddish hairs.

The *perichætium*, at the base of the peduncle, is a slight convex swelling, scarcely visible.

taxifolium 2 HYPNUM fronde simplicissima pinnata lanceolata, basi pedunculifera. *Sp. pl.* 1587. (*Vail. Paris. t.* 24. *f.* 11. *opt.* *Dillen. musc. t.* 34. *f.* 2. *bona. Oed. Den. t.* 473. *f.* 2.)

Yew-leav'd Hypnum. *Anglis.*

In woods and shady places. III. IV.

This also consists of a plain, simple, pinnated leaf, like the preceding, many arising from the same base, but is larger, being about half an inch high. The *pinnae* are lanceolate commonly about twelve pair, but often more in the old plants, divided by a middle nerve, and largest at the top of the leaf.

The

The peduncle is reddish, about half an inch or a little more in height, and arises out of a scaly *perichæcium*, at the base of the leaf.

The capsule is incurved or nodding, and nearly cylindrical, green at first, reddish brown when ripe. The *operculum* is red, incurved and pointed. The *calyptra* greenish, lateral, and turned upwards. The rim ciliated.

denticula-
tum 3.

HYPNUM fronde pinnata simplici, pinnis duplicatis, basi pedunculifera. *Sp pl.* 1588. (*Vail. Paris. t. 29. f. 8. bona Dillen. musc. t. 34. f. 5. opt. Moris. hist. f. 15. t. 6. f. 36.*)

Double-row'd Hypnum, with crooked fins. *Anglis.*
In woods and moist shady places. IV.

The leaves are from half an inch to an inch and a half long, generally simple, pinnated, and lying flat on the ground, of a pale green colour, pellucid and shining. The *pinnæ* are placed alternately in a double series, or so close as to lie upon one another, broad at the base, acute at the point, and recurved or falcated.

The peduncles arise from the base of the leaves, erect, an inch high, or a little more, slender and reddish. The capsules, at their first appearance, are erect, and covered with a thin, upright, straw-colour'd *calyptra*. Afterwards they become incurved, and, when ripe, are again erect.

The *operculum* is short, and without a point. The rim of the orifice is densely ciliated.

HYPNUM

adiantoides 4. HYPNUM fronde pinnata ramosa erecta, medio pedunculifera. *Sp. pl.* 1588. (*Buxb. cent.* 2. t. 1. f. 4. *Vail. Paris.* t. 28. f. 5. *melior. Dillen. musc.* t. 34. f. 3. *opt.*)

Upright Yew-leav'd Bog Hypnum. *Anglis.*

In bogs, but not very frequent, as at *Achlyne*, near the head of *Loch-Tay*, in *Breadalbane*, &c. *Mr. Stuart.* III. IV.

The leaves are erect, branched, pinnated, about two inches high, and sometimes even four inches; the *pinnae* are plain, lanceolate, and often forty pair, or more in number. The peduncles arise singly from the middle of the leaf (that is neither at the base nor the summit, but somewhere between both) hardly an inch high, and of a tawny red colour. The capsules are oval, fuscous, nearly erect at first, but when ripe inclin'd. The *operculum* is red and pointed; the *calyptra* straw-colour'd, with a brown tip; the rim of the orifice ciliated with red hairs.

complanatum 5. HYPNUM fronde pinnata ramosa, foliolis imbricatis acutis complicatis compressis. *Sp. pl.* 1588. (*Moris. hist.* f. 15. t. 5. f. 5. *Vail. Paris.* t. 23. f. 4. *bona. Dillen. musc.* t. 34. f. 7. *opt.*)

Flat shining feathered Hypnum. *Anglis.*

Upon trunks of trees frequent. III. IV.

The leaves lie flat upon each other, and cover the trunks of the trees in broad patches. They vary in length from two to four inches, and are pinnated,

nated, creeping, and branched. The *pinnae* are distichous, alternate, imbricated, acutely elliptical, convex on the upper side, concave on the under, pale green, transparent and shining, largest on the principal rib, smaller on the branches, minute and almost capillary at the extremities of the young branches.

The peduncles are about half an inch high, copious, slender, red, and arise either out of the middle rib, or the angles of the branches. The capsules are erect, short, oval, of a yellow fuscous colour, turning red when ripe. The *operculum* is conical, yellow and pointed; the *calyptra* pale and incurved; the rim has no ring, but is ciliated with white hairs.

** *Surculis vagis.*

Incens 6.

HYPNUM *surculis ramosis, frondibus subpinna-
tis, foliolis punctatis. Sp. pl. 1589. (Dillen. musc.
t. 34. f. 10.)*

Large leav'd shining Hypnum. *Anglis.*

Upon the ground by the sides of rivulets, in dark shady woods, but not common. III. IV.

The stalks lie flat on the ground. are an inch and a half, or two inches long, either simple or slightly branched; the branches obtuse, and dilated at the extremity; the leaves are large, oval, pellucid, membranaceous, elegantly reticulated with dots of a whitish green colour, and laxly imbricated in a double or triple series.

The

The peduncles are about an inch high, saffron-colour'd, and arise from the *alæ* of the leaves, on various and uncertain parts of the stalks. The capsules are small for the size of the plant, oval, more or less nodding, and of a blackish brown colour. The *operculum* is pointed; the *calyptra* straight, white and pointed; the rim ciliated.

undulatum 7 HYPNUM furculis ramosis, frondibus subpinna-tis, foliolis undulatis complicatis. *Sp. pl.* 1589. *Dillen t.* 36. f. 11.)

Waved Hypnum. *Anglis.*

Upon moist ground, on rocks, and in woods. IV.

The stalks are three or four inches long, compress'd, single or slightly branched, gradually pointed to the end, and spread flat on the ground.

The leaves are of a whitish green colour, lanceolate, acute, transversely undulated, and densely imbricated in a double or triple series. In their *alæ* are often found bulbous gems, composed of minute leaves, wrapped closely together, which are the rudiments of future branches.

The peduncles are slender, red, about two inches long, and arise out of the *alæ* of the leaves, either towards the base or about the middle of the stalks. The capsules are oblong, green, slightly incurved, and terminated with a pointed *operculum*; when old they become more incurv'd, ferruginous, and striated. The *calyptra* is yellowish

lowish, with a fuscous point; the rim ciliated; the *perichatium* composed of short, narrow, reflexed scales.

The fructification is rarely to be found.

crispum 8. HYPNUM furculis ramosis, frondibus subpinna-
tis, foliolis undulatis planis. *Sp. pl.* 1589. (*Mor-
ris. hist. f.* 15. *t.* 5. *pag.* 625. *Haller. hist. l.* 46.
f. 5. *Dillen. musc. t.* 36. *f.* 12. *opt.*)

Crisped Hypnum. *Anglis.*

Upon dry rocky places not unfrequent, and some-
times at the roots of trees. IV.

This is one of the most elegant of the genus. The
stalks are commonly about four inches long, but
vary from two to nine inches; obtuse at the end.
They are compressed; irregularly, and often op-
positely, branched, and lie closely imbricated
upon one another, in wide patches. The leaves
are obtusely lanceolate, distichous, alternate,
densely imbricated, shining, and transversely un-
dulated with four or more semicircular concen-
tric wrinkles, or plaits. The upper and younger
leaves are of a pale green colour; the lower and
older ones of a yellowish brown.

The peduncles are very short for the size of the
plant, being about half an inch long, of a pale
green colour, arising out of the *axe* of the leaves
from various parts of the stalk. The *capsules*
short, oval, dull green, reddish at the base, erect
or slightly incurved; the *operculum* has a long
point;

point; the *calyptra* is long, with a reddish tip; the rim ciliated with pale dents.

triquetrum 9. HYPNUM ramis vagis recurvis, foliis ovatis recurvatis patulis. *Sp. pl.* 1589. (*Vail. Paris. t.* 28. f. 9. *Dillen musc. t.* 38. f. 28.)

Great pale triangular Hypnum. *Anglis.*

In woods, about the roots of trees, and in barren grounds abundantly. X-XII.

The stalks vary from four to eight or nine inches high, nearly erect, stiff and elastic, of a red colour, irregularly branched; the branches horizontal, deflex'd, and taper at their ends.

The leaves are broad, triangular, acute, pellucid, slightly streak'd, and so open and expanded that the red nerve of the stalk is distinctly seen between them. When young or fresh they are of a pale green; when dry, of a yellowish white colour; largest on the principal stalk, especially at the top; smallest on the branches.

The peduncles are one or two inches high, of a bright red shining colour, and arise generally near the angles of the branches, out of a scaly, oblong, reddish *perichætium*.

The capsules at first are slender, and slightly leaning, covered with a bending *calyptra*; afterwards they swell, become cylindrical, reddish, curv'd and nodding, and at last are fuscous and striated. The *operculum* is very short, obtuse and

and reddish. The rim of the orifice is furnished with a ring, and ciliated.

In the *alæ* of the leaves are sometimes found small red globular gems, composed of minute leaves, closely wrapped together, which *Linnaeus* supposes to be female fructifications.

This moss is often used, on account of its flexibility and elasticity, to pack up glass and earthen-ware.

rutabulum 10. HYPNUM ramis vagis subrepentibus, foliolis ovatis mucronatis imbricatis. *Sp. pl.* 1590. (*Morris. hist. f.* 15. *t.* 6. *f.* 35. *Vail. Paris. t.* 27. *f.* 8. & *t.* 23. *f.* 2. *Dillen. t.* 38. *f.* 29.)

Common dented ground Hypnum. *Anglis.*

At the roots of trees, in woods, and under hedges very common. X-XII.

This is somewhat like the preceding, but differs in having much shorter stalks, creeping, and not red, but yellowish; the branches more erect, cylindrical, and entangled together; the leaves much less, oval-lanceolate, terminated with a short hair, darker green colour, and more closely pressed to the stalk. The peduncles are shorter, more numerous, and much more commonly produced.

The capsule nods, is convex on the upper side, concave on the under, and red when ripe. The *operculum* is short and conical; the rim ciliated.

ruscifforme B. There is a variety of this moss, the branches of which

which, at their extremities, grow distichous, compressed, and taper; and the *operculum* has a long, acute point. See *Dillen. musc. t. 38. f. 30. & t. 38. f. 31.*

This is made a distinct species by *Haller* in his *bist. Helvet. n* 1731, and by *Weis* in his *Plantæ Cryptogamicæ*, p. 225; which last author terms it *HYPNUM rusciforme*.

It grows at the roots of trees, and in damp places by river sides, and often produces globular, sessile, scaly gems.

*** *Surculis pennatis.*

flicinum I I *HYPNUM furculis pennatis*, ramulis distantibus, foliolis imbricatis incurvis acutis secundis. *Sp. pl.* 1590. (*Vail. Paris. t. 29. f. 9. Dillen. musc. t. 36. f. 19. opt.*)

Bog Fern-Hypnum. *Anglis.*

In bogs and springs, and about cascades. III.

The stalk varies from three to six inches in height, sometimes prostrate, but often erect, generally pinnated with simple regular distant branches, placed at right angles with the middle rib, longest in the middle, and shortest at the two extremities of the stalk. The leaves are yellowish, green, closely imbricated, narrow, falcated, curled, and their points all bent downwards. The rib to which they are annexed is firm, thick, and reddish. Sometimes the principal stalk is branched, or doubly pinnated.

The

The peduncles are red, from one to two inches high, and arise out of the middle nerve. The capsules are oblong, inclin'd, green at first, red when ripe. The *operculum* short, conical, and obtuse; the *calyptra*, visible only upon the young capsules, is straight and pale.

We have observed that the water, in which this moss is found to grow, has generally an encrusting or petrifying quality, which may be readily discovered by examining the base of the stalks.

crista castrensis 12.

HYPNUM furculis pinnatis, ramulis approximatis, apicibus recurvis. *Sp. pl.* 1591. (*Vail. Paris. t. 27. f. 14. bona. Dillen. t. 36. f. 20. opt.*)

Plume-crested Hypnum. *Anglis.*

Upon rocks, and about the roots of trees, in dry woods and stoney soils not unfrequent, especially in the highlands. III.

This greatly resembles the preceding, but differs from it in the following respects: The stalks are much shorter, and grow in wide, thick, matted, intricate patches. The *pinnae*, or branches (especially towards the top of the stalk) are crowded close together, and curled at the ends, like the plume of the ostrich. The peduncle is not above half an inch high; the capsule is shorter, and more oval, and the *operculum* is not obtuse, but furnished with a short beard or point. The capsules are rarely to be found.

HYPNUM

proliferum 13. HYPNUM furculis proliferis plano-pinnatis, pedunculis aggregatis. *Sp. pl.* 1590. (*Vail. Paris. t. 25. f. 1. Dillen. musc. t. 35. f. 14. opt.*)

Proliferous Tamarisk Hypnum. *Anglis.*

In thick shady woods frequent. III.

The stalk of this elegant species is six or eight inches long, creeping, and pinnated with branches nearly opposite to each other, and gradually decreasing in length from the base upwards. These branches are again doubly pinnated, and all of them densely imbricated with extremely small leaves, so closely press'd to the central nerves that they appear to the naked eye only as minute grains. The colour of the leaves is either a deep green, or a yellow autumnal green, without any gloss or shining appearance. The principal nerve is firm, elastic, and proliferous, shooting out new erect branches, similar to the parent; and these again become proliferous, shooting out other new ones from their centre.

The peduncles are about an inch high, red, shining, and arise either singly, or three or four near each other, out of the nerve; having each a thick, hairy, conical *perichætium* at their base. The capsules at first are of a fuscous green colour, but, when ripe, are red and recurved. The *operculum* is conical and bearded; and the fructifications are rarely seen.

HYPNUM

parietinum 14. HYPNUM furculis plano-pinnatis continuatis, pedunculis aggregatis. *Sp. pl.* 1590. (*Buxb. cent.* 2. t. 1. f. 2. *Dillen. musc.* t. 35. f. 13. *Vail. Paris.* t. 29. f. 1. opt.)

Proliferous shining Tamarisk Hypnum. Wall Hypnum. *Anglis.*

In woods and heaths frequent. II.

This is similar to the preceding in its manner of growth, ramification, and proliferous quality; but differs in having a flat compress'd appearance, larger and arched stalks, red pellucid nerves, larger and more distinct leaves, of a pale green, or yellowish colour, with a silken, glossy appearance.

The peduncles and capsules are like the foregoing, but rather shorter, and rarely produced.

The *Swedes* use this and the preceding moss to stop up chinks and crevices in the walls of their timber-built houses.

praelongum 15. HYPNUM furculis subbipinnatis decumbentibus, ramulis remotis, foliis ovatis, antheris cernuis. *Sp. pl.* 1591. (*Vail. Paris.* t. 23. f. 9. *bona. Dillen. musc.* t. 35. f. 15.)

Trailing Hypnum. *Anglis.*

Upon the roots of trees, decay'd wood, and damp ground. X-XII.

The stalks are often five or six inches long, and upwards, either matted together, or single, procumbent

cumbent and creeping; alternately pinnated with fine capillary distinct branches, some of which are again pinnated a second time. The leaves are very small, triangular, patent, terminated with a sharp point or hair, of a pale green or yellowish colour, and laxly imbricated in a double alternate series.

The peduncles are slender, red, and about an inch high. The capsules are of a dark green colour, short, oval, tumid, and nodding, fuscous when ripe. The *operculum* is sharply pointed, and often recurved. The *calyptra* erect, and whitish green.

This Hypnum may be readily distinguished by its long trailing pinnated stalks, and tenuity of its leaves.

**** *Foliis reflexis.*

cupressiforme 16.

HYPNUM furculis subpinnatis, foliis secundis recurvis apice subulatis. *Sp. pl.* 1592. (*Vail. Paris. t. 27. f. 13. bona. Oed. Dan. t. 535. f. 2: Dillen. musc. t. 37. f. 23. opt.*)

Curled Cypress Hypnum. *Anglis.*

In woods at the roots of trees frequent. II.

The stalks are from two to four inches long, prostrate, compress'd, and irregularly pinnated or branch'd; of a shining yellow green colour, matted and entangled together. The central nerve is widest, and the upper branches are often thick, or clubb'd at the extremities; and both have

have a singular, flat, chain-like appearance on the upper side.

The leaves are oval-lanceolate, convex on the upper side, concave on the under, recurv'd with all their points downwards, terminated with a hair, and densely imbricated in many series.

The peduncles arise, without order, out of the middle nerve, slender, of a tawny red colour, hardly an inch high.

The capsules are short, cylindrical, erect, or but very slightly curved, of a pale green colour at first, tawny when ripe. The *operculum* is short, conical, and pointed; the *calyptra* erect and yellowish.

aduncum 17 HYPNUM furculis erectiusculis subramosis, foliis secundis recurvis subulatis, ramis recurvatis.

Sp. pl. 1592. (*Dillen. musc. t.* 37. *f.* 26.)

Hooked bog Hypnum. *Anglis.*

In bogs and wet pastures. V.

The stalks are from two to four inches high, erect, slightly and irregularly branched.

The leaves are subulate, falcated, and all turn one way, crowded at the ends of the stalk and branches, and reflex'd so as to form a remarkable hook or curl. The colour is a dark green, if it grows in pure water, or out of bogs; but in muddy places is yellowish or red-brown.

The peduncles are slender, red, and two inches high; the capsules oval, tumid, fuscous, and a little inclin'd; the *operculum* short, conical, and obtuse.

scorpioides
18.

HYPNUM ramis vagis procumbentibus recurvis foliis secundis acuminatis. *Sp. pl.* 1592. *Dillen. musc. t.* 37. *f.* 25.

Great Scorpion creeping bog Hypnum. *Anglis.*

In bogs and marshes, but not very common. We observed it in the bogs at *Coriattachan*, in *Strath Swardie*, in the isle of *Skye*.

This moss is three or four inches long, procumbent, and irregularly branched. The branches are thick, fuscous, convex, hooked and yellow at their extremities. The leaves are densely imbricated, oval, acuminate, and recurv'd downwards.

The peduncles are two inches high, and of a red colour; the capsules oblong, reddish, and a little inclin'd; the *operculum* short and conical; the *perichætium* prominent, long, and pointed.

viticulosum
19.

HYPNUM furculis repentibus, ramis vagis tere-tibus, foliis patulis acuminatis. *Sp. pl.* 1592. (*Moris. hist. f.* 15. *t.* 5. *f.* 7. *absque Filamentis.* *Vail. Paris. t.* 23. *f.* 1. *bona.* *Dillen. musc. t.* 39. *f.* 43. *opt.*)

Long cylindrical Hypnum. *Anglis.*

At the roots of trees in dry woods. III.

The stalks are fibrous at the base, very long, trailing, and branched. The branches are erect, generally simple, sometimes divided, long and cylindrical. The leaves are of a yellow green colour, small, triangular, carinated, acute, their points slightly recurv'd, so as to assume a curled appearance, and generally turned the same way. When dry they appear crisped and capillary.

The peduncles are of a pale yellow colour at first, afterwards reddish, slender, erect, hardly an inch high, arise from the sides of the branches, out of a small scaly *perichætium*. The capsules are erect, small, cylindrical, at first yellowish, afterwards fuscous. The *operculum* is short, conical, and acute; the orifice has no ring, and the *cilia* are so minute as to be hardly visible without a magnifier.

In the *alæ* of the leaves are sometimes found small, hard, sphaerical granules, or gems, which, by the help of a glass, appear to be composed of minute leaves, or scales. These granules are supposed, by *Linnaeus*, to be female fructifications.

squarrosum 20, HYPNUM ramis vagis, foliis lanceolatis complicato-carinatis quinquefariam recurvatis. *Syst. nat. edit. 13. pag. 800. Sp. pl. 1593. (Dillen. musc. t. 39. f. 38. varietas major, & t. 39. f. 39. varietas minor. Vail. Paris. t. 27. f. 5. bona. Oed. Dan. t. 535. f. 1. opt.)*

Reflex'd-leav'd Hypnum. *Anglis.*

In moist pastures frequent. VII.

The stalks are four or five inches long, or more, reclining if single, erect if tufts, irregularly divided into a few straggling branches. The nerve is firm, red, and visible between the leaves.

The leaves are oval-lanceolate, sharp-pointed, pellucid, carinated, generally disposed in five series around the nerve, and all reflex'd, so that the stalk appears angular. Their colour is usually a pale or yellowish green.

The peduncles are red, an inch or an inch and a half high, having a scaly cylindrical *perichaetium* at their base. The capsules are nearly oval, reddish brown, and nodding. The *operculum* is short, conical, and obtuse. The *calyptra* is pale, conical and pointed, erect on the young capsules, deflexed on those more advanced. The rim of the orifice is surrounded with a slender ring, and ciliated with yellow hairs. The capsules are rarely produced.

β. The smaller variety has lesser leaves, more thickly set, and more reflex'd.

***** *Surculis dendroidibus seu fasciculatis.*

dendroides
21.

HYPNUM furculo erecto, ramis fasciculatis terminalibus simpliciusculis, antheris erectis. *Sp. pl.* 1593. (*Moris. hist. f.* 15. *t.* 5. *f.* 31. *Vail. Paris. t.* 26. *f.* 6. *non bene.* *Dillen. musc. t.* 40. *f.* 48. *A. B, opt.*)

Tree-like Hypnum. *Anglis.*

In

In woods about the roots of trees, and in moist pastures. XII-III.

The root is an horizontal fibre, curved with ferruginous down; from which arises a perpendicular naked stem, two or three inches high, terminated with a cluster of *cylindrical*, and, for the most part, *simple*, smooth, pointed, and nearly erect branches, which gives this moss the appearance of a tree in miniature.

The leaves are oval-lanceolate, acute, upright, flat, densely and closely imbricated, and of a yellowish green shining colour.

The stem above-mentioned is of a dark red colour, imbricated with brown faded scales; and by the sides of it, arising from the same root, are often to be seen young, perpendicular spikes or shoots, which are the rudiments of future stalks and branches, and which, in process of time, expand themselves.

The peduncles are rarely to be found, but, when they are, they arise copiously from the base of the branches, about an inch high, erect, and of a red colour, bearing oblong, erect, slender red capsules, having each a short, conical *operculum*, terminated with a point or beard. The *calyptra* is straw-colour'd; the rim ciliated.

alopecurum
22.

HYPNUM furculo erecto, ramis fasciculatis terminalibus subdivisis, antheris subnutantibus.
Sp. pl. 1594. (*Moris. hist. f.* 15. *t.* 5. *f.* 30. *Vail.* *Paris.* *t.* 23. *f.* 5. *Dillen. musc. t.* 41. *f.* 49. *opt*)

Fox-

Fox-Tail Hypnum. *Anglis.*

In moist woods, and by the sides of rivers in shady places. III. IV.

This is exactly similar to the preceding in its manner of growth, and tree-like appearance; but differs from it in having taller stems, longer branches, and more divided; their extremities not erect, but a little reflex'd; the leaves larger and patent, so as to shew the middle nerve between them; of a dark green colour, without gloss. They are imbricated in a quadruple series, and in the dry plant have their points a little recurv'd one way, so as, by their alternate arrangement, to give the upper part of the nerve a peculiar chain-like appearance; whereas the leaves of the preceding, in their dry state, are erect, and pressed close to the nerve.

The peduncles are rarely produced, and are shorter than those of the preceding. The capsules are more tumid, and not erect, but inclin'd. The *operculum* is pointed.

In the *alæ* of the leaves are sometimes seen spherical grains, or gems.

***** *Surculis teretiusculis.*

purum 23. HYPNUM furculis pinnato-sparsis subulatis, foliis ovatis obtusis conniventibus. *Sp. pl.* 1594. (*Vail. Paris. t. 28. f. 3. Dillen. musc. t. 40. f. 45. f. A. B.*)

Neat

Neat Hypnum. *Anglis.*

In woods, pastures, and at the foot of rocks. II.

The stalks vary from three to six or eight inches in height, according as they are in a dry or moist situation. They are cylindrical, nearly erect, pinnated, densely imbricated with oval-lanceolate leaves, of a yellowish colour, closely pressed to the stalk and branches, like scales, and of a remarkable neat, shining, glossy appearance, free from all dirt or filth. The old pinnated branches produce, near their summits, other new shoots, which are also branched, but without order.

These secondary branches are thickest, or clubb'd at their extremities, and generally a little recurved, their leaves being of a pale green colour, with a peculiar silken gloss.

The peduncles, which are rarely produced, arise out of the middle nerve, and are an inch or two high, erect, and of a red colour. The capsules are cylindrical and inclin'd. The *operculum* is bearded, and the rim distinctly ciliated.

Dillenius informs us, that the fishermen in *Lancashire* make choice of this moss to scour their worms, under the name of *Stag's-Horn Moss*.

A variety of the above *Hypnum* sometimes occurs in similar places, having longer stalks, more slender and pointed branches, narrower and more acute leaves, more thinly set, pressed to the stalk on two opposite sides, and a little raised from

from it on the other two. The nerve, or central rib is of a red colour; the fructifications like the preceding. See *Vail. Paris. t. 29. f. 10.* & *Dillen. musc. t. 40. f. 47.* Haller makes this a distinct species, and *Weis* a variety of *H. cuspidatum. Lin.*

riparium 24. **HYPNUM** furculis teretibus ramosis, foliis acutis parulis distantibus. *Sp. pl. 1595. (Dillen. musc. t. 40. f. 44.)*

Water Hypnum. *Anglis.*

Upon the banks of rivers, and upon planks and stones about water-mills. III. IV.

The stalks are from three to six inches long, fibrous at the base, laxly branched, and without order. The branches are long and cylindrical, if growing out of the water, but pinnated if floating under it. The leaves on the cylindrical branches are oval, acute, and densely imbricated; on the pinnated ones, under the water, lanceolate, more acute, patent, and terminated with a sharp hair-like point. Their colour is a dark shining green.

The peduncles are short in proportion to the length of the moss, being about an inch high, erect, and of a shining red colour. The capsules are oval, tumid, inclin'd, at first of a dark reddish brown colour, afterwards of a dull green. The *operculum* is conical, with a short point; the *calyptra*, and young capsules, are erect; the rim ciliated; the fructifications are produced under the

the

the water, which is singular, and a presumptive argument that the contents of the *antheræ*, or capsules, are something different from mere *Pollen*, or *Farina*.

This moss sometimes produces scaly gems out of the *alæ* of the leaves.

cuspidatum
25.

HYPNUM furculis vagis, apice foliis convolutis acuminato. *Sp. pl.* 1595. (*Dillen. musc. t.* 39. *f.* 34. *opt.*)

Spear-pointed Bog Hypnum. *Anglis.*

In bogs and marshes frequent. IV.

The stalks are erect, three or four inches high, irregularly branched, and sometimes obscurely pinnated. The extremities of the stalk and lateral branches end in a stiff point, occasioned by a close convolution of the upper leaves, which affords an excellent character for distinguishing this moss. The leaves are oval-lanceolate, acute, pellucid, a little patent, and rather laxly imbricated. The nerves are red near their summits, and the leaves often of a yellowish colour, with a slight tinge of red.

The peduncles are erect, two or three inches high, of a red colour, and arise out of the central nerve, having a long scaly *perichætium* at their base. The capsules are tumid, oval, a little gibbous, inclined, of a green colour at first, afterwards tawny. The *operculum* is short, conical, obtuse and red. The *calyptra* long, pointed and straw-colour'd. The rim ciliated.

Surculis

***** *Surculis confertis.*

sericeum 26 HYPNUM surculo repente, ramis confertis erectis
foliis subulatis, antheris erectis. *Sp. pl.* 1595.
(*Moris. hist. f.* 15. *t.* 5. *f.* 25. *Vail. Paris. t.* 27.
f. 3. *a b.* *Dillen. musc. t.* 42. *f.* 59. *opt.*)

Silky Hypnum, with erect heads. *Anglis.*

On the trunks of trees, and on walls and rocks
very common. I-II.

The stalks are long and creeping, and adhere close
to the place of growth by numerous downy,
fuscous fibres. The branches are copious, and
grow in tufts, some simple, others much di-
vided, cylindrical, short, nearly erect when moist,
incurved when dry, and rigid to the touch.
The leaves are narrow, lanceolate, terminated
with a long hair, densely imbricated, press'd to
the stalk when dry, and appearing capillary,
but wider and patent when moist, and of a yel-
lowish green silky colour.

The peduncles are reddish, half an inch high, or
a little more, produced in plenty. The cap-
sules are widest at the base, cylindrical towards
the top, erect, and cinnamon-colour'd. The
operculum is red and pointed; the *calyptra* pale;
the rim finely ciliated with white hairs.

β. A variety of this sometimes occurs with stalks six
inches long, branches longer and more erect,
and capsules slightly inclin'd. See *Dillen. musc.*
t. 42. *f.* 60.

HYPNUM

velutinum 27. **HYPNUM** furculo repente, ramis confertis erectis, foliis subulatis, antheris subnutantibus. *Sp. pl.* 1595. (*Vail. Paris. t.* 26. *f.* 9. *Dillen. musc. t.* 42. *f.* 61. *opt. Oed. Dan. t.* 475.)

Velvet Hypnum, with stooping heads. *Anglis.*

At the roots of trees, and on the ground in shady places. II.

This moss forms a thick mat or carpet. The stalks creep and shoot numberless erect, short, simple branches, without order, and entangled together. The leaves are very small, lanceolate, acute, terminated with a short hair-like point, press'd to the nerve when dry, patent when moist; of a deep green colour, but tinged with yellow when old.

The peduncles are copious, nearly an inch high, and reddish. The capsules are oval, shining, of a reddish fuscous colour, all inclin'd the same way. The *operculum* is short, conical, and reddish; the *calyptra* is pale green, at first erect, afterwards oblique; the rim ciliated.

serpens 28. **HYPNUM** furculis repentibus, ramis filiformibus, foliis oblitteratis. *Sp. pl.* 1596. (*Moris. hist. l.* 15. *t.* 5. *f.* 14 & 21. *Vail. Paris. t.* 28 *f.* 6. *opt. & f.* 2. 7. 8. *Dillen. musc. t.* 42. *f.* 64.)

Creeping capillary Hypnum. *Anglis.*

Upon rotten wood, the roots of trees, in wells, and on the ground in moist shady places. IV.

The stalks are very slender, creeping, and matted together

together ; the branches tender, filiforme, a little erect, and slightly branched. The leaves are extremely minute, oval-lanceolate, terminated with a hair-like point, patent, alternate, and thinly set ; of a fine green colour.

The peduncles are numerous, very long for the size of the moss, being two inches high, erect, red and shining. The capsules are erect at first, and covered with white *calyptræ* ; afterwards they swell, become cylindrical, large, a little inclin'd, green at first, but turning afterwards yellowish. The *operculum* is short and conical, and slightly acuminate ; the rim ciliated.

The smallness of the branches, and tenuity of the leaves, make this moss, at a distance, appear like a filamentary *byssus* ; which circumstance, together with its numerous red peduncles, and white *calyptræ*, will readily discover it.

sciuroides HYPNUM furculis erectis ramosis incurvatis. *Sp.*
29. *pl.* 1596. (*Vail. Paris. t.* 27. *f.* 12. *Dillen muse.*
t. 41. *f.* 54.)

Squirrel-Tail Hypnum, *Anglis.*

On the trunks of old trees. III. IV.

The stalks are three or four inches long, fibrous, and creeping. The branches cylindrical, an inch or an inch and a half high, simple, or a little divided ; somewhat rigid when dry, and often incurv'd ; but lax, tumid, erect, and flexible when moist. The leaves are oval-lanceolate, and terminated with a short hair-like point, pressed

pressed to the stalk when dry, but patent when moist, so as to render the stalks tumid, like a squirrel's or fox's tail. The colour is dark green, turning rusty when old.

The peduncles are half an inch high, erect, and saffron-colour'd. The capsules oblong, cylindrically oval, erect, and of a reddish brown colour. The *operculum* conical and acute. The *calyptra* pale, with a yellow tip. The rim surrounded with white *cilia*. The capsules are rarely produced.

In some of the more tumid branches are often seen innumerable fuscous granules, or gems, which, through a microscope, appear to be composed of minute leaves. These granules are, according to *Linnaeus*, the female fructifications.

myosuroides 30. HYPNUM furculis ramosissimis, ramis subulatis utrinque attenuatis teretibus. *Sp. pl.* 1596. (*Morris. hist. f.* 15. *t.* 6. *f.* 3. *Vail. Paris. t.* 27. *f.* 6. *non bene. Dillen. t.* 41. *f.* 51. *opt.*)

Moose-tail Hypnum. *Anglis.*

On trunks of trees, and on rocks. II, III.

The stalks are fibrous and creeping, from two to four inches long, divided towards the extremity into several irregularly pinnated branches, which pinnules, or secondary branches, are cylindrical, numerous, taper, and a little incurv'd. The leaves are oval-lanceolate, concave, terminated with a hair-like point, smooth, closely imbricated, and of a bright green colour.

The

The peduncles are saffron-colour'd, one and sometimes two inches high, and arise near the base of the branches. The capsules are oval, oblong, slightly inclin'd, of a yellowish brown colour; the *operculum* acutely conical; the rim ciliated.

It varies with branches not so slender, but more tumid in the middle, and capsules quite erect. See *Dillen t. 41. f. 50.*

Greater Mouse-tail Hypnum. *Anglis.*

gracile 31. HYPNUM furculis repentibus, ramis fasciculatis teretibus erectiusculis, antheris erectis ovatis. *Lin. syst. nat. edit. 13. p. 801.* Hypnum *ornithopoides.* *Huds. Fl. Angl. p. 430.* (*Dillen. musc. t. 41. f. 55.*)

Bird's-foot Hypnum. *Anglis.*

Upon trunks of trees, and on rocks, as about *Arthur's Seat*, near *Edinburgh*, &c. *Mr. Yalden.* II.

This greatly resembles the preceding in its habit and manner of growth, but is rarely above two inches long. The branches arise out of a creeping stalk, and are sub-divided each into a cluster of cylindrical, taper, incurved, secondary branches, more slender than those of the preceding moss.

The leaves are oval-lanceolate, acute, pressed to the stalk when dry, a little elevated when moist, and of a yellowish green colour.

The

The peduncles are reddish, about half an inch high, and arise near the base of the secondary branches. The capsules are cylindrically oval, erect, of a yellowish brown colour when ripe. The *operculum* is acutely conical; the rim ciliated; the capsules are rarely found.

Obs. Mosses, by the inconsiderate mind, are generally deem'd an useless or insignificant part of the creation. That they are not is evident only from hence; that He who made them has made nothing in vain, but, on the contrary, has pronounced all his works to be *very good*. Many of their uses we know; that they have many more which we know not, is unquestionable, since there is probably no one thing in the universe of which we can dare to assert that we know *all* their uses. Thus much we are certain of with respect to mosses; that as they flourish most in Winter, and at that time cover the ground with a beautiful green carpet, in many places which would be otherwise naked, and when little verdure is elsewhere to be seen, so at the same time they shelter and preserve the seeds, roots, gems, and embryo plants of many vegetables, which would otherwise perish; they furnish materials for birds to build their nests with; they afford a warm Winter's retreat for some quadrupeds, such as bears, dormice, and the like, and for numberless insects, which are the food of birds and fishes, and these again
the

the food or delight of men. Many of them grow on rocks and barren places, and, rotting away, afford the first principles of vegetation to other plants, which could never else have taken root there. Others grow in bogs and marshes, and, by continual increase and decay, fill up and convert them either into fertile pastures, or into peat-bogs, the source of inexhaustible fuel to the polar regions.

They are applicable also to many domestic purposes: The *Lycopodiums* are some of them used in dying of yarn, and in medicine; the *Sphagnum* and *Polytrichum* furnish convenient beds for the *Laplanders*; the *Hypnums* are used in tiling of houses, stopping crevices in walls, packing up of brittle wares, and the roots of plants for distant conveyance.

To which may be added, that all in general contribute entertainment and agreeable instruction to the contemplative mind of the Naturalist, at a season when few other plants offer themselves to his view.

ALGÆ.

A L G Æ.

JUNGERMANNIA. *Gen. pl.* 1196.*Masc.* pedunculatus nudus. *Anthera* quadrivalvis.*Fem.* sessilis, nudus, seminibus subrotundis.* *Frondibus pinnatis secundis.**trichomanes*

1.

JUNGERMANNIA frondibus simpliciter pinnatis, foliolis ovatis planis integerrimis, caule apice femineo. *MNIUM trichomanes. Lin. Sp. pl. 1578. JUNGERMANNIA. n. 1858. Haller. hist. stirp. Helvet (Dillen. musc. t. 31. f. 5. Schmi- edelii disp. de Jungerman. f. 17.)*

Powder-headed Jungermannia. *Anglis.*

In damp shady woods by the sides of springs and rivulets. IV.

The stalks are about an inch long, rarely branch'd, prostrate and creeping. The leaves are oval, thin, pellucid, plain, entire on the edges, growing pinnate, close to each other, and of a pale green colour. The ends of the stalk and branches are raised from the ground, and terminated with a small, round, granulated head, of a green colour, supported on a very short peduncle, similar to the female fructification of the *MNIUM*, and doubtless of the same use. Beneath this head the leaves grow gradually smaller upwards, and more thinly set than in other parts of the stalk.

The male fructifications we have never yet seen, but as *Haller* and *Schmiedel* affirm their existence, we have no doubt of its being a true *Jungermannia*, as the whole habit otherwise declares; and as many more, if not all the *Jungermannia* are found to produce farinaceous granules of the like sort, either sessile, or supported on very short peduncles.

Linnaeus has placed this plant among the MNIS, but as no one has ever observ'd it to produce capsules covered with *Calyptræ*, it cannot properly be rank'd under that genus.

fissa 2.

JUNGERMANNIA frondibus simpliciter pinatis, foliis bifidis, caule apice femineo. MNIS fissum. *Lin. Sp. pl.* 1579. JUNGERMANNIA. n. 1864. *Haller. hist. stirp. Helvet. & Scop. Fl. Carniol. p.* 348. n. 1345. *Michel. gen. t.* 5. f. 14? *Dillen. musc. t.* 31. f. 6.)

Powdered Jungermannia, with bifid leaves. *Anglis.*
In moist shady woods, by the sides of springs and rivulets. IV

This grows in all respects like the former, and has the same kind of granulated globular heads, but the leaves are bifid or horned at the extremity, and sometimes the horns are also tipp'd with sessile granulated globules. We have never yet seen the male fructifications, but *Micheli* has figured them, and the whole habit of the plant declares the genus.

J. frondibus

asplenoides J. frondibus simpliciter pinnatis, foliolis ovatis subciliatis. *Sp. pl.* 1597. (*Michel. gen. t. 5. f. 3. ciliis non depictis. Loes. Pruss. 167. t. 47. absque ciliis. Dillen. t. 69. f. 5. opt.*)

Spleenwort *Jungermannia. Anglis.*

In moist shady woods, and at the roots of trees, mixed with other mosses. IV.

This is the largest the *British Jungermannia*. The stalks are about a finger's length, raised a little from the ground, either simple, or divided into a few branches. The leaves are roundish, gibbous, or a little convex on the upper side, and concave underneath; pellucid, yellowish green, destitute of nerves, finely ciliated on the edges, growing alternately, pinnate, and near to each other.

The fructifications are produced at the extremities of the branches, out of long *cylindrical vaginae*, or sheaths. The peduncles are about an inch long, pellucid, and silvery; the *antheræ*, or heads, are oval, of a shining black-red colour, bursting into four equal lanceolate valves, containing a fine *pollen*, or powder, affixed to numerous curled elastic hairs, as in all the other species of that *genus*.

β. There is a variety of this with leaves more evidently ciliated, and growing more closely pinnate, so that their edges lie upon one another, but in other respects the same. See *Michel. gen. t. 5. f. 1: 2. Moris. hist. f. 15. t. 6. f. 42. Vail. Paris. t. 19. f. 7. Dillen. musc. t. 69 f. 6. opt.*

The *cilia* in both kinds are hardly distinguishable without a microscope.

viticulosa 4 JUNGERMANNIA frondibus simpliciter pinnatis, foliolis subulatis. *Sp. pl.* 1597. (*Mich. gen. t.* 5. f. 4. *Dillen. musc. t.* 69. f. 7.)

Straggling Jungermannia. *Anglis.*

In shady moist woods, mixed with Hypnums. IV.

This is much like the preceding in its habit and manner of growth, but the stalk produces more branches; the leaves are less, and gradually diminished towards the extremities of the branches, of an oval figure, widest at the base, their edges entire, and a little reflexed in the dry plant, so as to make them appear acuminate, and the fructifications are produced not at the extremities but in the middle, or near the base of the stalk and branches. The *vagina* is white, and divided into four short dents. The peduncle is nearly of the same length with that of the former, but the *autbera* is smaller.

The stalk varies from an inch to a finger's length, and the leaves are tender, pellucid, and of a pale green colour.

This and the preceding species are sometimes found growing in the water, on the sides of clear limpid streams and fountains, where it acquires a pleasant fragrant smell, which it retains even dry for several years.

JUNGERMANNIA

polyanthes JUNGERMANNIA frondibus simpliciter pinnatis, foliolis integerrimis imbricatis convexis. *Sp. pl.* 1597. (*Mich. gen.* 1. 5. f. 5. *Dillen. musc.* 1. 70. f. 9.)

Short creeping imbricated Jungermannia. *Anglis.*

By the sides of rivulets in shady moist places, and in woods upon moist rocks. IV.

The stalks are hardly an inch long, branched, prostrate, and creeping. The leaves are obtusely oval, entire, concavo-convex, growing alternately and closely pinnate, so as to lie upon one another.

The peduncles are about half an inch high, pellucid, silvery, and copiously produced from the middle nerve, near the origin of the branches.

It differs from the preceding in the shortness and smallness of the stalk and branches, the imbrication of the leaves, and the shortness and plenty of the peduncles.

lanceolata 6 J. frondibus simpliciter pinnatis lanceolatis apice floriferis foliolis integerrimis. *Sp. pl.* 1597. (*Mich. gen.* 1. 5. f. 6. 7. *Dillen. musc.* 1. 70. f. 10. opt.)

Small lanceolate-stalk'd Jungermannia. *Anglis.*

In moist shady places, and on rotten trunks of trees. II. III.

The stalks are hardly an inch long, of a lanceolate figure, generally simple and creeping, but sometimes divided towards the upper part into two or three short upright branches, growing at right

right angles. The leaves are plain, roundish, or obtusely oval, entire on the edges, growing alternate, and rather laxly pinnate, except at the top of the branches, where they are crowded together, imbricated, and of a bright green colour.

The peduncle is white and shining, hardly half an inch high, and arises out of the top of the stalk. The *anthera* is dark, fuscous, green, turning black.

This species generally grows in clusters.

bidentata 7 J. frondibus simpliciter pinnatis, apice floriferis, foliolis bidentatis. *Sp. pl.* 1598. (*Moris hist. f.* 15. t. 6. f. 17. *Michel. gen. t.* 5. f. 12. *Vail. Paris. t.* 19. f. 8. *Dillen. musc. t.* 70. f. 11. opt.)

Bifid Jungermannia. *Anglis.*

In moist shady places, and by the sides of rivulets.

X. XI.

The stalks are weak, prostrate, sometimes simple, sometimes branched, and vary from an inch to a finger's length. The leaves are plain, thin, pellucid, whitish green, nearly of a square figure, and sometimes roundish, divided at the top by a semilunar section, so as to leave two acute dents at the corners, and grow alternately pinnate.

The peduncles arise out of the tops of the stalk and branches, white and pellucid. The *vagina* is nearly triangular and laciniated. The *anthera* roundish, black, and shining.

J. fron-

bicuspidata 8. J. frondibus simpliciter pinnatis medio floriferis, foliolis bidentatis. *Sp. pl.* 1598. (*Michel. gen. t.* 6. f. 17. *Dill. musc. t.* 70. f. 13. *opt.*)

Forked Jungermannia. *Anglis.*

In woods and moist shady places. IV.

The stalks are from half an inch to an inch long, and creeping. The leaves are very small, much less than those of the preceding, and divided into two sharp points, or forks, at the top, but so that the angle between them is acute.

The peduncles are about half an inch high, and copiously produced, not from the extremities, but the angles of the branches. The *vaginæ* are cylindrical, and longer than those of the preceding, being about 1-6th of an inch.

quinquedentata 9. J. fronde pinnata ramosa apice florifera, foliolis quinquedentatis. *Sp. pl.* 1598. (*Dillen. musc. t.* 71. f. 23. *opt.* *Michel. gen. t.* 6. f. 2. *auſta.*)

Five-dented Jungermannia. *Anglis.*

In thick shady damp woods, mix'd with other mosses. IV.

Its manner of growth resembles that of the former, but the stalks are larger, and the lower leaves are divided into three, and the upper ones into four and five acute dents, and the fructifications are produced from the tops of the branches, out of large angular dented *vaginæ*.

The central nerve on the under side is covered is covered with minute finely indented scales.

** *Frondibus*

**** Frondibus pinnatis, pinnulis auriculatis superne
tectis.**

undulata 10 J. frondibus supra bipinnatis apice floriferis, folio-
lis subrotundis integerrimis. *Sp. pl.* 1598, (*Dillen. musc.* t. 71. f. 17. *Vaill. Paris* t. 19. f. 6.)

Ear'd Jungermannia, with entire undulated leaves,
Anglis.

In shady woods at the roots of trees. IV.

The stalks are above an inch high, divided into three or four branches, erect or leaning, and grow in clusters. The middle nerve is blackish and fibrous at the base. The leaves are convex above, concave beneath, entire, but slightly waved on the edges, furnished each with a small auricle at the base, which embraces the nerve. They are of a dark reddish brown colour at the base of the stalk, and smaller than those at the summits of the branches, which are of a fuscous green colour. They grow alternately pinnate, near to each other, but patent, distinct, and not imbricated.

The peduncles are white, about an inch long, and arise singly at the top of the branches, out of a fuscous green oblong sheath. The *antheræ* are roundish and fuscous.

resupinata 11. J. frondibus supra bipinnatis inferne floriferis, foli-
olis crenulatis imbricatis rotundis. *Sp. pl.* 1599.
(*Dillen. musc.* t. 71. f. 19.)

Reclining crisped Jungermannia, *Anglis.*

In the fissures of rocks, and on heaths and moorish grounds frequent. IV.

The stalk reclines upon the ground, and is little more than half an inch long, either simple or divided into one or two branches. The leaves, or pinnules, are round, concavo convex, numerous, alternate, vertical, closely set, embrace the nerve, and are crenulated on the edges, having a small erect scale, or auricle, at their base. The number and alternate position of the pinnules, with the erect scales betwixt them, give this plant a singular crisped appearance. *Linnaeus* fancies the under side of it to resemble a ladder or stair-case. The colour is a fine green.

The fructifications are generally produced near the base of the stalks and branches, and sometimes, but rarely, from their summits. The *vagina* is large, tumid, and indented. The peduncles are about half an inch high, white and pellucid.

A green granulated is sometimes seen on the edges of the pinnules.

albicans 12 J. frondibus supra bipinnatis apice floriferis, foliolis linearibus recurvatis. *Sp. pl.* 1599. (*Vail. Paris. t. 19. f. 5. Dillen. musc. t. 71. f. 20. opt.*)

Narrow curv'd-leav'd Jungermannia. *Anglis.*

In woods and shady places frequent. III. IV.

The stalks are commonly about an inch high, but vary

vary from half an inch to an inch and a half, and grow in clusters; they are either simple, or divided into two or three branches, erect or reclining, but not creeping. The middle nerve is firm and strong; the leaves, or pinnules, are narrow, linear, obtuse, plain, recurved, entire, of a pale green colour, the old decay'd ones quite white; at the base of each, on the upper side of the stalk, is a small scale, or auricle, hardly visible without a microscope, but none on the under side.

The fructifications are produced at the extremities of the stalk and branches. The *vagina* is pale and indented; the peduncle short, white, and pellucid; the *anthera* roundish, black, and bursting as usual, into four dark, red, or fuscous segments.

purpurea 13 J. pinnis subtus auriculatis, foliolis subrotundis convexo-concavis amplexicaulibus. *Scopol. Fl. Carniol. n. 1343. Haller. hist. n. 1861. JUNGERMANNIA cochleariformis. Weis. Plant. Cryptogam. p. 123. MNIUM jungermannia. Lin. Sp. pl. 1579. (Michel. gen. t. 5. f. 16. Dillen. t. 69. f. 1. opt.)*

Red Jungermannia. *Anglis.*

In bogs, rivulets, and cascades, by the sides of the highland mountains abundantly.

The stalks are either simple, or divided into two or three branches, commonly about a finger's length, but varying from one inch long to eight or

or more, erect and shortest in bogs and marshes, and of a dark green colour, their tops only red; but prostrate and longest in rivulets and cascades, and of a dark or blood-red colour.

The leaves in the adult plant are roundish, or obtusely oval, convex on the upper side, concave on the under, densely imbricated, embracing the nerve at their base, and deflex'd in such a manner over the nerve as to make the stalks appear almost round, or at least semicylindrical. Between these leaves, at their base, on the under side, may be discovered other lesser leaves, or auricles, nearly of the same shape with the larger ones.

In the young plants the leaves are round, plain, alternately and more thinly set, very variable in size, and without auricles.

The fructifications we have never yet been able to discover. *Dillenius* and *Micheii* have observed farinaceous granules at the summits of the stalks, and *Haller* has seen the *vagina* and peduncles of a *Jungermannia* growing from the same part, so that there can be no doubt of its being truly a *Jungeermannia*, as the whole habit and external appearance declare.

J. frondibus subtus bipinnatis apice reptantibus,
reptans 14. foliolis quadridentatis. Sp. pl. 1599. (Dillen. musc.
t. 71. f. 24.

Small

Small creeping dented *Jungermannia*. *Anglīs.*

In damp shady places, and on rotten wood. IV.

The stalks are branched without order, procumbent, and creeping, shooting out radicles at the end and other parts of the nerve. The leaves are nearly square, plain, very minute, pellucid, divided at the top into three or four dents, hardly visible without a microscope, growing alternately and closely pinnate in the moist plant, but opaque, deflex'd, and imbricated in the dry one. On the under side are affix'd to the nerve a double series of other leaves, or auricles, a little smaller than the preceding, but dented, and of the same figure.

The fructifications are copious, and produced at the base of the stalk, or in the centre of the plant. The *vagina* is triangular, white, and denticulated at the top. The peduncles pellucid and silvery. The *anthera* black and shining.

This is one of the least of the genus, but may be readily discovered by its dented leaves and numerous fructifications.

*** *Fronibus imbricatis.*

complanata J. furculis repentibus, foliolis inferne auriculatis
15. duplicato-imbricatis, ramis æqualibus. *Sp. pl.*
1599. (*Mich. gen. t. 5. f. 21. Dillen. musc. t. 72.*
f. 26. opt.)

Flat

VI Flat pale-green Jungermannia. *Anglis.*

On trunks of trees common. III. IV.

This is a tender, unelastic species, either of a pale green, or a yellowish green colour, adhering flat to the bark of trees, and irregularly branched to the extent of one or two inches. The leaves are closely imbricated in a double series and alternate order, of a circular figure, flat, nearly transparent, and cover the middle nerve on the upper side. On the under side are minute, round, or oval scales, or auricles, at the base of the leaves, which adhere to the nerve.

The fructifications arise indifferently at the extremities and angles of the branches, and sometimes out of the middle of them. The *vagina* is compress'd and flat, twice as large as the leaves, of a pale green colour, and truncated at top. The peduncle is slender, silvery, and very short, not above 1-12th of an inch long. The *anthera* oval, of a greenish black colour, and bursts into four fuscous hairy segments.

Pale green farinaceous grains are sometimes seen on the edges of the leaves, as in many other species.

dilatata 16 J. furculis repentibus, foliis inferne auriculatis duplicato-imbricatis, ramis apice latioribus. *Sp. pl.* 1600. (*Michel. gen. t. 6 f. 6. Vail. Paris. t. 19. f. 10. Dillen. musc. t. 72. f. 27. opt.*)

Little dark-green convex scaly Jungermannia. *Anglis.*

On

On trunks of trees very common. III. IV.

This adheres closely to the bark of trees, in the same manner as the preceding, but differs from it in the following particulars:

It is either of a dark green or a red brown colour, more branched than the other; the branches more slender, especially at their base, but dilated, and closely imbricated towards their extremities; whereas those of the other are of equal breadth throughout. The leaves are not above half so large, are convex above, and concave beneath, and not of so flaccid a texture as the preceding. The nerve on the under side is loosely imbricated with an alternate series of round scales, or auricles, larger than those of the foregoing, and but little less than the upper leaves of this, which give the under surface a crisped appearance.

The fructifications arise at the extremities of the branches. The *vaginæ* are more turgid and angular; the peduncles shorter, hardly a line in height; the *antheræ* smaller, fuscous, and dividing into four hairy segments.

tamarisci 17 J. foliis imbricatis serie duplici; superioribus subrotundis convexis obtusis quadruplo majoribus. *Sp. pl.* 1600. (*Michel. gen. t. 6. f. 5. Dillen. musc. t. 72. f. 31. opt.*)

Red Tamarisk Jungermannia. *Anglis.*

On

On trunks of trees, rocks, and often upon the ground amongst other mosses, in dry stoney places, and in woods; on the rocks at the foot of *Edinburgh* castle, &c. III.

This differs from the preceding, in being much longer, and more branched, and growing upon one another, so as to form imbricated tufts, of a dark red or chesnut colour, not adhering close to, but hanging more loose and detach'd from, the substance on which it grows. The branches are still more slender than the foregoing, but of equal breadth throughout; their extremities obtuse. The leaves are extremely minute, less than the preceding, and so closely imbricated in a double series, as to be hardly distinguishable from one another. They are convex on the upper side, roundish, shining, and their edges deflex'd; and concave on the under. The nerve is more visible than in the preceding, and appears as if jointed on the under side, being imbricated the whole length with small bifid scales, which is an essential character of distinction.

The fructifications arise at the extremities of the branches. The peduncles are extremely short; the *anthera* yellowish brown.

The colour of the young plants is a dark green, of the adult ones generally a reddish brown or chesnut.

J. furculis

platyphylla. J. surculis procumbentibus subtus imbricatis, foli-
 18. olis cordatis acutis. *Sp. pl.* 1600. (*Mich. gen.* t.
 6. f. 3. 4. *Vail. Paris.* t. 19. f. 9. *Dillen. musc.*
 t. 72. f. 32. opt.)

Great Arbor vitæ Jungermannia. *Anglis.*

About the roots of trees in shady woods frequent,
 and often at the bottom of walls and rocks, as
 about *Arthur's Seat*, &c. III. IV.

The stalks are about a finger's length, compress'd,
 widely and irregularly branched, nearly erect,
 and detach'd from the substance on which they
 grow, lying over one another, so as to form an
 imbricated tuft or mat, generally of a deep
 green, and sometimes a fuscous green colour.

The leaves are oval-lanceolate, closely imbricated
 in a double series, alternately disposed over each
 other from the right hand to the left, and from
 the left to the right, convex on the upper side,
 concave on the under, and furnished with small
 auricles at their base. The nerve appears
 jointed, being imbricated with small scales.

The fructifications arise from the extremities and
 sides of the branches, out of the *alæ* of the
 leaves.

The *vaginæ* are thin, membranaceous and greenish;
 the peduncles very short; the *antheræ* greenish,
 black, bursting into four fuscous segments.

This is one of the largest of the *British Junger-*
manniæ.

There

There is a variety of this with shorter and rounder leaves, but in other respects not differing from the preceding. See its fig. *Dillen. musc. t. 72. f. 33.*

**** *Surculis undique imbricatis, foliolis sparsis.*

julacea 19. J. *surculis teretibus, foliolis undique imbricatis, floribus pedunculatis. Sp. pl. 1601. (Dillen. musc. t. 73. f. 38.)*

Silvery alpine *Jungermannia. Anglis.*

Upon the moist rocks by the sides of rivulets, on the Highland mountains frequent, as on *Ben-Lomond, Goatfield, in Arran, &c. IX. X.*

The stalks grow in tufts, from one to two inches high, erect, cylindrical, about the thickness of a silken thread, having a few irregular branches; closely imbricated all around with minute convexo-concave leaves, of a shining silvery colour, resembling the *BRYUM argenteum*. The roots or bottom of the stalks are black and fibrous.

The *antheræ* are fuscous, supported on white pellucid peduncles, 1-8th of an inch long, arising from finely indented *vaginæ*, which grow on the summits of the branches.

The plant, when dry'd, loses its gloss, becomes brittle, and turns to a greenish grey colour.

There is either a very singular variety of this, or else a distinct species, found not unfrequently upon the dry rocks on the Highland mountains, and which is taken no notice of by authors.

E e e

The

The habit of it is so very singular that we shall venture to describe it as a new species, till it's history is better ascertained by those who have an opportunity to observe its different gradations.

concinata

25.

J. furculis teretibus subcompressis densè imbricatis compactis, foliis convexo-concavis glabris, floribus pedunculatis. (*Fig. nulla nisi sit Dillenii musc. t. 73. f. 38.*)

Braided Jungermannia. *Anglis.*

Upon the rocks on the Highland mountains frequent. IX. X.

The stalks are about a quarter of an inch high, irregularly branched, like the preceding, and grow together in matted tufts of a reddish brown colour on the top, the base and roots pale green. The stalks are extremely slender and filiform, but thickest at the extremities of the branches, not exactly cylindrical, but a little compress'd, and so firm and closely imbricated on both sides with a double alternate series of convexo-concave, oval, compressed leaves, as to resemble, when magnified, the texture of a braided lock of hair, or that of a round plaited thong-whip.

The leaves are very numerous, undistinguishable by the naked eye, smooth, brown, but slightly membranaceous, and whitish on the edges, and always pressed close to the stalk, both in its moist and dry state. The *antheræ* are fuscous, and grow on the summits of the branches, on short peduncles.

peduncles. The stalks when dry are very brittle.

rupestris 21. *J. furculis teretibus, foliolis subulatis secundis.*
Sp. pl. 1601. (*Dillen musc. t.* 73. *f.* 40.)

Dusky rock *Jungermannia*. *Anglis.*

Upon moist rocks on the Highland mountains frequent, as on *Ben-Lomond*, *Goatfield*, &c. IV. & IX.

This grows in little tufts of a dusky brown or blackish colour. The stalks are about one-third or half of an inch high, erect, cylindrical, either simple or slightly branched, and surrounded with numerous fine subulate, or capillary leaves, having their points all turned to one side.

The *vaginæ* are fuscous, and arise at the top of the stalks. The *antheræ* are supported on very short peduncles, scarcely a line in height.

The plant when dry becomes brittle.

alpina 22. *J. furculis teretibus, foliolis ovatis patentibus, calycibus imbricatis.* *Sp. pl.* 1601. (*Dillen. musc. t.* 73. *f.* 39.)

Chocolate alpine *Jungermannia*. *Anglis.*

Upon the rocks on the Highland mountains frequent. IX. X.

The stalks are nearly erect, from one to two inches high, cylindrical, divided into several branches towards the top, and grow in tufts of a dark red, or chocolate colour.

The leaves are oval-acute, slightly convex, very small and numerous, and cover the stalks all round; are somewhat patent in the moist plant, but pressed to the stalks in the dry, and are broadest towards the summits of the flowering branches.

The *calyx* or *vagina* is singular: It grows at the tops of the branches, and is composed of oblong concave chesnut-colour'd scales, resembling the foliaceous gem of a beech-tree.

The *antheræ* are dark-red, and nearly sessile, being supported on very short peduncles. The segments are reflex'd when the plant is dry.

***** *Acaules frondibus simplicibus.*

epiphylla 23 J. acaulis, foliolo frondi innato Sp. pl. 1602. (Michel. gen. t. 4. f. 1. Oeder. Dan. t. 359. Dillen. musc. t. 74. f. 41.)

Broad-leav'd Jungermannia. *Anglis.*

On moist shady banks by the sides of rivulets, and on wet rocks, as about *Roßlin*, and elsewhere. Dr. *Parsons* III.

This plant has the habit of a *Marchantia*, but of a more tender substance, pellucid, and tessellated. The leaves are about half an inch broad, and lie flat upon the ground, are smooth, and of a light green colour on the upper side, divided in the middle by a black line or nerve; which, on the under side, emits numerous downy radicles, by which the plant adheres closely to the ground.

Each

Each leaf is divided into two or three obtuse or round segments, a little sinuated and crisped on the edges.

From the centre of the leaves, out of a red *calyx*, arises a short, cylindrical *vagina*, with a quadrid rim, out of which grows a pellucid, tubular, silvery, tender peduncle, about two inches high, bearing at the top a globular *anthera*, of a blackish green colour, which bursts into four roundish, oval, smooth segments, in the centre of which are black, elastic hairs, exploding a yellowish brown powder.

Linnaeus fancies the *anthera* (which remains sessile in the *calyx* for some time during the Winter, before it shoots up upon the peduncle in the Spring) to be a pistil, as in regular flowers; around which may be found, he says, some small *stamina*, about seven in number. *Flor. suec. No. 1047.*

The manner in which this plant encreases, is by shooting out new leaves from the segments of the old ones, in the Autumn. *Scop. Carniol. no. 1351.*

punguis 24. J. acaulis, fronde oblonga sinuata pinqui. *Sp. pl.* 1602. (*Michel. gen. t. 4. f. 2. Pluk. alm. t. 42. f. 2. sine fructific. Dillen. musc. t. 74. f. 42. opt. Vail. Paris. t. 19. f. 4?*)

Jagged slippery Jungermannia. *Anglis.*

In quaking bogs, mix'd with other mosses. IV.

The

The leaves of this are pellucid and slippery, of a pale green, and sometimes a fuscous green colour, very variable in size and figure, being from a quarter of an inch to two inches long, and from 1-8th to 1-3d of an inch wide, growing sometimes prostrate and sometimes erect, irregularly sinuated or jagged on the edges, and having downy radicles growing out of the middle nerve on the under side.

The leaves which produce the *antheræ* are less than the others, commonly prostrate, and more jagged, the segments narrower, and often subdivided into two or three lobes. From the edges of these leaves, or the angles of their segments, arise white, pellucid peduncles, one or two inches high, having long, cylindrical, pale green *vaginæ* at their base, and oval or elliptical shining black *antheræ* on their summits, which burst into four oval-lanceolate segments.

The other leaves, which are wider, taller, less divided, more rigid, often erect, and growing in clusters, are destitute of *antheræ*, but, instead thereof, have numerous green minute grains, or warts, growing along their middle, and sometimes out of their curled edges, which are either seeds, or the rudiments of future leaves.

This plant may therefore not improperly be considered as *diœcious*, having a sort of male and female fructifications on distinct individuals of the same species.

J. acaulis,

furcata 25. J. caulis, fronde lineari ramosa extremitatibus furcatis obtusiusculis. *Sp. pl.* 1602. (*Michel. gen. t.* 4. f. 4. *Vail. Paris. t.* 23. f. 11. *Dillen. musc t.* 74. f. 45. *opt.*)

Forked Jungermannia. *Anglis.*

On trunks of trees frequent, sometimes upon rocks and on the ground. III. IV.

This species generally grows prostrate, or creeps together, so as to form lax, entangled tufts, composed of very thin linear, pellucid, flat leaves, of a pale green colour, more or less branched, and terminating in bifid or trifid obtuse segments, having a fine longitudinal nerve, running throughout the middle of each leaf, and its ramifications.

These leaves vary from one quarter to an inch in length, and are about 1-12th of an inch in breadth.

The fructifications arise from the under side of the leaves, out of the nerve. The *vaginæ* are nearly globular, pale green, and *hairy*, which is singular. The peduncles are about a quarter of an inch high, turn up at their base, and grow erect. The *antheræ* are reddish brown, and nearly sphaerical.

TARGIONIA *Gen. pl.* 1197.

Calyx bivalvis includens globum.

TARGIONIA.

hypophylla
1.

TARGIONIA. *Sp. pl.* 1603. (*Michel. gen. p.* 3. t. *Dillen. mns. t.* 78. f. 9. *Colum. ecphras. i. p.* 331. f. 333.)

Vetch Targionia. *Anglis.*

Upon rocks covered with little earth, but not common. We gathered it once only, near the *Tarbet* of *Cantire*, on the confines of *Knapdale*. VI.

The leaves are about a quarter of an inch long, of an inverted heart-shap'd figure, growing prostrate in a clump together. Their upper surface is green, covered with numerous minute whitish *papillæ*, with a hollow dot in the head of each; the under surface is black, with downy white radicles, by which it adheres close to the ground. The substance of these leaves is tough and opaque, and very like that of the *Marchantia*. When dry their edges turn upwards, and almost hide the upper surface, so that the plant appears all black.

The fructification grows at the great end of the leaf, on the under side, and consists of two concave valves, or hemispheres, of a reddish black colour, enclosing a chocolate-colour'd globule, resembling the seed of a tare or vetch, full of a yellow powder.

The leaves are proliferous, and encrease by shooting out young offsets from their sides, like the animal called a *Polype*.

MARCHANTIA. *Gen. pl.* 1198.

MASC. *Calyx* peltatus, subtus tectus corollis monopetalis. *Antherae* multifidæ.

FEM.

FEM. *Calyx* sessilis, campanulatus, polyspermus.

polymorpha MARCHANTIA calyce communi decemfido.
 1. *Sp. pl.* 1603. (*Michel. gen. t.* 1. *f.* 1. *Dillen. musc.*
t. 76. *f.* 6.)

Great star-headed Marchantia. *Anglis.*

On shady moist rocks, on the banks of rivulets,
 and the sides of wells, and sometimes in bogs.
 V-VII.

The leaves are about three inches long, from half an inch to an inch wide, lying flat upon the ground, and adhering closely to it by numerous downy radicles, which grow out of the middle and base of the leaf, on the under side. These leaves are variously divided into obtuse lobes sinuated on the edges; their upper surface of a dark, shining, green colour, reticulated with numerous minute rhomboidal, or lozenge-like scales, and divided in the middle by a black purple vein; their under side is of a paler green, and their substance coriaceous and nearly opaque.

The fructifications are of three kinds. The first are flat, circular umbels, a quarter of an inch in diameter, arising generally out of the sinuses of the leaves, at first sessile, but afterwards elevated on firm pedicles, from half an inch to an inch high; at first whitish, but afterwards turning to a dark brown or blackish colour. These umbels are at first entire on the edges, but afterwards divided into seven, eight, or nine,

CRYPTOGAMIA ALGÆ.

nine, obtuse, thin, membranaceous segments, plain on the upper side, a little tumid and scaly underneath, but, so far as observations have hitherto been made, barren of flowers and seeds. They may therefore be called *Neuters*, till we are more acquainted with their use, and can give them a better name. They are at first green above, and brownish underneath, but in decay turn totally brown.

The *second* are *males*. They arise from the same part of the leaves as the *neuter*, but from distinct individual plants. They are at first green, nearly hemispherical and striated, like some of the agarics, and stand on very short pedicles, reddish at the base, and beset with a few white hairs. The pedicles afterwards grow two inches high or more, and the convex or hemispherical head before mentioned, call'd by *Linnaeus* a *Perranthium*, now divides almost to the centre, into eight, ten, or more linear green rays, with their sides deflex'd, having as many pale, hairy, bladder-like purses placed alternately between them; which purses have each one valve, which opens in the month of *July*, and which contains within it four or five white monopetalous florets, each of an hollow oval form, with four or five segments on the rim. From the centre of each floret arises a single filament, bearing at the top a funnel-shap'd *anthera*, dented on the rim, and containing a yellow powder, affixed to elastic hairs. This is a most curious and wonderful piece

piece of mechanism, and highly deserving of a microscopical examination.

The *female* fructifications are found upon both the varieties before-mentioned, but chiefly upon the first or umbellated kind. They grow here and there out of the disc or surface of the leaves, in the shape of small, green, elevated, monopetalous, inverted-conical cups, with membranaceous rims, irregularly crenated, containing many small, naked, round, compressed, green seeds, or, as some authors term them, *feminal leaves*. These cups appear first in *September*, and continue all the Winter and succeeding Spring, but dry away before the males begin to shed their powder, according to *Dillenius*, though it is extremely probable that the seeds are at some time or other impregnated by its influence.

β. There is yet a variety of this plant, by some authors considered as a species. It is smaller in all its parts than the preceding, except the umbellated heads, which are nearly of the same size. The leaves are shorter, paler green, and lie over one another, are destitute of the black purple veins, not shining above, reticulated with oblique lozenges, having each a puncture in the centre, and more woolly underneath, with downy parallel veins running both ways from the middle towards the margins. The *anthera* of the floret in this is black and globular.

See

See *Michel. gen. t. 1. f. 2. Dillen. musc. t. 77. f. 7.*
 Small star-headed Marchantia. *Anglis.*

It grows upon walls, rocks, and shady neglected walks, about houses and gardens, flowering at the same time with the other.

The leaves of the first kind have a strong aromatic smell and acrid taste, and are recommended, in a decoction of skimmed milk, as good in the jaundice, and other disorders of the liver.

hemisphærica 2. **MARCHANTIA** calyce communi quinquefido
hemisphærico, perichætio nullo. Sp. pl. 1604.
(Michel. gen. t. 2. f. 2. Dillen. musc. t. 75 f. 2.)

Hemisphæric Marchantia, with crenated leaves.
Anglis.

On wet banks and rocks, by the sides of rivulets, amongst the mountains not uncommon, as near *Inverarn*, at the head of *Loch-Lomond*, at *Killin* in *Breadalbane*, and on *Ben-na-caillich*, in the isle of *Skye*, and in *Edinburgh-Park*, &c. Observ'd in the last place by Mr. *Talden*. IV. V.

The leaves of this are much smaller than those of the preceding, being from half an inch to an inch long, and about a quarter of an inch wide, divided at the extremity into two obtuse heart-shap'd lobes, slightly crenated on the margin. These leaves generally lie one upon another, are commonly a little concave on the upper side, and covered with very fine prominent scales, or tubercles, running obliquely from the middle to
 the

the edges, but are not reticulated. The under side and margin of the leaves are of a dark red or claret-colour, covered with white downy radicles.

The pedicles are about an inch high, dark red, somewhat downy, and arise out of the disc of the leaves, near the extremity of the lobe, without any *vagina* or *perichæcium* at their base.

The head or *Pileus*, called by *Linnaeus* a *Perianthium*, is nearly hemispherical, green, and covered with tubercles, dividing at the margin generally into five, and sometimes four or six short oval-acute segments, having as many cavities under them, containing each one globular *anthera*, bursting with a dented margin, and casting out a dark fuscous powder. At the insertion of the pedicle into the *Pileus* are downy white hairs.

No female fructifications have yet been observ'd in this species.

conica 3. MARCHANTIA calyce communi quinqueloculari subovato. *Sp. pl.* 1604. (*Column. Ecphras.* 1. p. 330. t. 331. *Michel. gen.* t. 2. f. 1. *Dillen. musc.* 1. 75. f. 1. *Oed. Dan.* t. 274.)

Conic Mushroom Marchantia with warted leaves. *Anglis.*

On moist shady banks by sides of rivulets, as about *Finlarig*, at the head of *Loch-Tay*, &c. III. IV.

The leaves are broad, flat about two inches long, dichotomous, obtusely lobed, and lie upon one another.

another. Their surface is of a pale green glossy colour, curiously tessellated with rhomboidal and hexagonal tubercles, each having a white vesicle, or wart, in the centre, with a puncture on its head, much more distinct and visible than in the first species. The under side is green, furnished with numerous downy radicles.

The male fructification arises from the nerve out of the disc of the leaf, having a fuscous cavity or *vagina* at the base. The pedicle is smooth, white, succulent, pellucid, and, when full grown three inches high. The *pileus*, or head, is conical, resembling one of the least agarics. It is at first of a pale green, afterwards yellow, and lastly, brown, containing generally five, but sometimes six or eight cells, open at the base, in each of which cells is a pendulous, conical, floret, having an *anthera*, which bursts with five segments at the rim, and casts out a dark, fuscous powder, according to *Micheli*, *Haller*, and others; but *Dillenius* says, he never could discover any thing more in the cells than an oval, compress'd grain, obscured at one end with a sooty powder. He could discern no pendulous floret, or segments to the *anthera*. The *pileus* appears first in the Autumn, and continues sessile all the Winter, but begins to be elevated on a pedicle in *March* or *April*.

The female fructifications appear upon the disc of distinct plants of the same species, in the form of sessile hemispherical spongy warts, flat at
top

top, convex at bottom, of a fuscous green colour, beset with numerous small grains or tubercles, supposed to be seeds. These warts are visible in *March* and *April*, and continue till *June*.

The leaves have a peculiar strong fragrant smell, and acrid aromatic taste. They are supposed to possess the same attenuating quality as the first kind, but in a higher degree. They are recommended as an antiscorbutic, and to thin the blood.

RICCIA. *Gen. pl.* 1200.

Cal. o. nisi cavitatem vesicularem intra folii substantiam.

Cor. o. *Anthera* cylindrica, sessilis, germini imposita.

Pistil. *Germen* turbinatum. *Stylus* filiformis, antheram perforans.

Pericarp. sphaericum, coronatum anthera emarcida.

Sem. hemisphaerica pedicellata.

glaucia 1.

RICCIA frondibus glabris canaliculatis bilobis obtusis. *Sp. pl.* 1604. (*Michx.* *gen. t.* 57. *f.* 4. *Vail.* *Paris. t.* 19. *f.* 1. *Dillen. musc. t.* 78. *f.* 10.)

Glaucous Riccia. *Anglis.*

Upon rocks slightly covered with earth, at the Tarbet of *Cantire*, &c. III. & X.

The leaves spread flat upon the ground, in a radiated circular form, about the breadth of a sixpence;

pence; each leaf of a whitish green colour, thick and opaque, once or twice divided, and terminated with two obtuse lobes, having a longitudinal furrow running along the middle from the base to the circumference through every lobe.

The fructifications we have not observed, but they are said to be small globules, disposed in rows within the substance of the leaves.

LICHEN. *Gen. pl.* 1202.

MASC. *Receptaculum* subrotundum, planiusculum nitidum.

FEM. *Farina* foliis aspersa.

A. * *Leprosi tuberculati.*

scriptus 1. LICHEN leprosus albicans, lineolis nigris ramosis characteriformibus. *Sp. pl.* 1906. (*Michel. gen. t.* 56. f. 3 *Dillen. musc. t.* 18. f. 1)

Lettered Lichen. *Anglis.*

On the smooth bark of trees frequent, as on beech, oak, hornbeam, &c.

This is readily distinguished by its black fructifications, resembling small oriental characters, which, under the microscope, appear to be longitudinally wrinkled.

There are two very remarkable varieties of this Lichen, which might perhaps be more properly considered as distinct species.

hebraicus a. The first has large black, smooth fructifications, standing in high relief, of no regular figure, but from

from their size and thickness, have a rude likeness to *Hebrew* characters. *Fig. non invenio.*

pulicaris β. The other consists only of small black, oval tubercles, each about the size of a flea, having a longitudinal furrow on the back. It grows generally in the crevices of the bark of old oaks: The figure of *Micheli* agrees with it. *Gen. pl. t. 54. ordo 37. f. 2.*

Neither of these two last are in *Dillenius's* collection at *Oxford*.

geographi. L. leprosus flavescens, lineolis nigris mappam referens. *Sp. pl. 1607. (Dillen musc. t. 18. f. 5. Oed. Dan. t. 468: f. 1.)*

Map Lichen. *Anglis.*

On rocks frequent, as in the king's park at *Edinburgh*, &c.

This species is readily distinguished at a distance. The crust, or ground, is of a bright greenish yellow color, sprinkled over with numerous, plain black tubercles, which frequently run into one another, and form lines resembling the rivers in a map.

atrovirens 3. L. leprosus viridis, margine tuberculisq: atris. *Sp. pl. 1907. (fig. nulla.)*

Black-green Lichen. *Anglis.*

Upon rocks about *New-Posso*, and other places. *Mr. Yalden.*

The crust is green, beset with numerous small crowded tubercles, the whole surrounded with a black margin. This differs but very little from the preceding, and is perhaps only a variety of it. The tubercles are flat, not elevated but level with the crust.

rugosus 4. *L. leposus albicans, lineolis simplicibus punctisq. nigris confertis. Sp. pl. 1607. Dillen. musc. t. 18. f. 2.)*

Wrinkled Lichen. *Anglis.*

On the smooth bark of trees frequent.

The ground or crust of this is so thin as to be hardly discernible. What little there is to be seen of it is whitish, and sometimes of a dull green colour. The fructifications are innumerable small black tubercles or dots, so crowded together as to form black spots of various size and figure, running transversely upon the bark. These dots in the old specimens are disposed in waved lines or furrows, which give the whole surface of the crust a wrinkled appearance.

pertusus 5. *L. leprosus, verrucis subteffellatis lævigatis pertusis poro uno alterove cylindrico. Syst. nat. edit. 13. p. 805. L. verrucosus. Hudf. Fl. Ang. p. 445. (Dillen. musc. t. 18. f. 9.)*

Porous warty Lichen. *Anglis.*

Upon trunks of trees, and sometimes upon rocks. The crust is smooth, of a greenish ash-colour when moist, cinereous when dry, and covered with numerous

numerous crowded, smooth, angular warts, of the same colour as the crust. Upon the head of each wart are small black impressed punctures, from one to ten in number, as if made with the point of a pin, under each of which punctures, if the wart be cut transversely, will be found a hollow sphaerical cell. In the old specimens the punctures open of themselves, and discover the cells.

sanguinari- L. leprosus cinereo-virescens, tuberculis atris. *Sp.*
us 6. *pl.* 1607. (*Dillen. musc. t.* 18. *f.* 3.)

Black nobbed Lichen. *Anglis.*

Upon the bark of trees frequent, and upon rocks, and sometimes upon the ground.

The crust is ash-colour'd, with a tinge of green.

The tubercles are quite black, without gloss, about the size of a pin's head, convex when old, often nearly globular, and without a margin. *Linnaeus* says, that when broken they are red within. We have sometimes found them so when growing upon rocks, but this is by no means a certain mark of distinction.

The ground of this, when found on rocks, is rough, not smooth, and tessellated like the following.

calcareus 7. L. leprosus candidus, tuberculis atris. *Sp. pl.* 1607.
(*Dillen. musc. t.* 18. *f.* 8.)

Black-nobb'd Dyer's Lichen. *Anglis.*

Upon calcareous rocks frequent, as on those to the east of the *Hermitage*, and on the *Pentland* hills, &c.

This differs very little from the preceding, when *that* grows upon rocks, as it often does as well as *this*. It may, however, be readily enough distinguished by its hard, smooth, white, stoney or tartareous crust, crack'd or tessellated on the surface. The tubercles are black, and very like those of the last.

Dillenius relates, that this Lichen is used in dying a red colour, in the same manner as the *L. tartareus* hereafter mentioned; and I doubt not but the foregoing would answer the same intention, when found upon rocks; neither do I think that the gatherers distinguish between them.

fusco-ater *L. leprosus fuscus, tuberculis atris. Sp. pl. 1607.*
8. (*Fig. nulla.*)

Black-nobb'd fuscous Lichen. *Anglis.*

Upon rocks, often mix'd with the foregoing.

The crust of this is brown or fuscous. In other respects it differs but very little from the preceding.

atro-albus *L. leprosus niger, tuberculis atro alboque mixtis.*
9. *Syst. nat. p. 805. edit. 13. Sp. pl. 1607. (Fig. nulla.)*

Black and white mix'd Lichen. *Anglis.*

Upon rocks, and often on peat earth.

The

The crust of this is composed of black and white tubercles, so equally mixed that it is difficult to say which are most predominant. The black tubercles have often flat heads, and are sometimes sinuated on the margin. It is nearly related to the *L. calcareus*.

ceruleo-nigricans 10 *L. leprosus cœrulescens, tuberculis nigricantibus.*
(*Dillen. musc. t. 82. f. 2.*)

Bluish Lichen, with black warts. *Anglis.*

Upon the Highland rocks, but not common.

The crust of this is granulated, and of a blue-grey colour, beset with numerous black, convex tubercles, or warts. It seems to be a distinct species, though nearly related to the preceding.

vernalis 11 *L. leprosus albidus, tuberculis subrotundis ferrugineis. Syst. nat. edit. 13. p. 805. L. ferrugineus.*
Huds. Fl. Ang. 444. (Dillen. musc. t. 18. f. 4.)

Vernal Lichen. *Anglis.*

On the bark of trees, and sometimes on walls and rocks.

There are two varieties of this, both with a thin ash-colour'd or whitish crust. The first has tubercles of a brick-dust colour; the other fuscous, or brownish ones, somewhat soft and gelatinous, not so distinct as the preceding, but crowded together. Neither have any circular margins.

Perhaps they may be distinct species.

L. leprosus

rupicola 12. *L. leprofus albidus, tuberculis pallidis albo-marginatis. Lin. syst. nat. edit. 13. p. 805. (Fig. nulla.)*

Pale Rock Lichen. *Anglis.*

Upon rocks frequent.

The crust is very thin, and ash-colour'd. The tubercles nearly of the same colour, convex in the centre, and surrounded with a whitish margin, which last is the most distinguishing character. Sometimes the whole assumes an olive colour. It is very like the *L. pallescens* var. β . n. 22. hereafter described; but the fructifications of this are tubercles, and not shields.

ventosus 13

L. leprofus flavus, tuberculis rubris. Sp. pl. 1607. (Dillen. musc. t. 18. f. 14. p. 133. Oed. Dan. t. 472. f. 1? mala.)

Red-spangled tartareous Lichen. *Anglis.*

Upon rocks facing the North both in the highlands and lowlands. Upon the mountains about *Breadalbane*. Mr. *Stuart*. Upon the rocks about *New-Posso*. Mr. *Yalden*. And upon the high rocks called the *Craig's-Pinnock*, at *Kirkmichael*, in *Dumfriesshire*. Dr. *Burgess*. We have also seen the same gathered in *Yorkshire* and *North-Wales*.

It has a hard tartareous crust, crack'd and tessellated on the surface, of a pale yellow colour when fresh, a light olive when dry. The tubercles a blood-red colour at top, their margin and base of the same colour as the crust.

It

It is an elegant species, very obvious at first sight.

That *Dillenius* intended this kind, by the figure and description referred to, we are certain, by having been indulged with a sight of the very specimen which he describ'd by Dr. *Sibthorpe*, at *Oxford*.

The texture and appearance of this indicate that it would answer the purposes of dying, as well as others of this tribe, if sufficient plenty of it could be found, and experiments were made.

fagineus 14 *L. leprosus albus, tuberculis albis farinaceis. Sp. pl. 1608. (Michel. gen. 1. 53. f. 1. 2. 4. Dillen. musc. t. 18. f. 11. A. B.)*

Mealy Beech Lichen. *Anglis.*

Upon the bark of beech, oak, and other trees frequent.

The crust is very thin and ash-colour'd, sprinkled over with numerous small white mealy tubercles.

carpineus 15. *L. leprosus cinereus, tuberculis albidis rugosis, Sp. pl. 1608 ? (Dillen. musc. t. 18. f. 11. C. D ?)*

L. albescens. Hudf. Ang. p. 445.

Grey orbicular Lichen. *Anglis.*

Upon the smooth bark of beech, and other trees frequent.

The crust is very thin, grey, or lead-colour'd, and spreads upon the bark in a circular form, the circumference being distinguished by concentric circles of different colours, alternately
olive

CRYPTOGAMIA ALGÆ.

olive and white or grey, in the same manner as in the border of the *AGARICUS versicolor*.

In the centre of the circle are many contiguous pale, wrinkled tubercles, covered with a smooth coat or pellicle; which pellicle bursts, and discovers an irregular excavated shield, containing a white powder. Besides these tubercles there are numerous cracks which run in lines from the centre of the crust towards the circumference.

Whether this and the preceding are distinct species, or only different sexes of the same species, is a matter of some doubt.

corallinus 16 *L. leprosus ramosus teres fasciculatus fastigiatus confertissimus albus. Syst. Nat. edit. 13. p. 805. (Dillen. musc. t. 17. f. 36. similis, sed vix eadem.)*

Coralline Lichen. *Anglis.*

Upon the Highland rocks, as about *Fintlarig*, in *Breadalbane*, &c. *Mr. Stuart*. We received the same also from *Dr. Burgess*, of *Kirkmichael*, in *Dumfriesshire*.

At first view this appears to be only a white tartareous crust, about 1-5th of an inch thick, with an unequal surface, form'd into knobs or buttons; but, being broken, and examined with a microscope, it is found to consist of compact bundles of short, round, stoney, branched, coral-like fibres, the branches all obtuse and even at the top, without tubercles.

L. leprosus

ericetorum L. leprosus candidus, tuberculis incarnatis. *Sp. pl.*
17. 1608. (*Mich. gen. t. 59. Ordo 35. Dillen. musc.*
14. f. 1.)

Flesh-colour'd Mushroom Lichen. *Anglis.*

Upon the ground in heaths, upon the sides of peat-bogs, gravel-pits, and on banks.

The ground of this Lichen is a thin, wide-spreading, granulated, leprous crust, of a greenish ash-colour, turning white in the Spring, out of which arise numerous convex flesh-colour'd tubercles, supported on short pedicles, like little *fungi*. The pedicles are grooved, somewhat thick, whitish, and about 1-6th of an inch high, often divided at the top, and supporting several tubercles.

β. A variety of this (according to *Linneus*) having the same kind of crust, but flat, sessile shields, instead of pedunculated tubercles, frequently occurs. It is figured in *Oeder's Fl. Dan t. 472. f. 4.* This deserves better to be distinguished as a species, according to our judgment, than the following.

byssoides 18 L. leproso-farinaceus, peltis stipitatis subglobosis.
Lin. mantiss. prima. p. 133. Syst. nat. edit.
13. p. 805. (*Dillen. musc. t. 14 f. 4. & 5.*) L.
rusus. Hud. Fl. Ang. p. 443.

Brown Mushroom Lichen. *Anglis.*

It grows upon rocks, old walls, and sometimes upon the ground.

The

The crust is farinaceous or granulated, like the preceding, and of the same colour, but the tubercles are brown. It is probably only a variety of the foregoing.

B. * *Leprosi scutellati*.

aurantiacus L. leprosus albido-cinereus, scutellis aurantiacis.
19. (Fig. nulla.) an *L. flavo-rubescens*? Hudf.

Orange Lichen. *Anglis*.

Upon the bark of oaks, and other trees, and sometimes upon rocks.

The crust, when it grows on bark, is whitish ash-colour'd, when on rocks darker ash-colour'd. The fructifications are numerous small shields, of an orange colour, with margins of the same colour. The margins of the larger and full-grown shields are curled or undulated. It is strange that *Dillenius* should not have describ'd this species, as we observ'd specimens of it amongst his collection huddled together with the *L. subfuscus*, from which none can be more distinct. *Micheli* seems to have mentioned it under the name of *Lichen crustaceus, arboribus adnascens, ex albo subcinereus, receptaculis florum aureis nudis*. *Gen. pl. p. 98. No. 33.*

We should think it the same with *Hudson's L. flavo-rubescens*, but the fructifications are properly shields, and not tubercles.

candelarius L. crustaceus flavus, scutellis luteis. *Sp. pl. 1608.*
20. (*Dillen. musc. t. 18. f. 18.*)

Yellow

Yellow farinaceous or crufted Lichen. *Anglis.*

Upon walls and rocks common, and upon boards and old pales.

a. Of this there are two varieties. The first has a farinaceous cruft, of no regular figure, covered with numerous small, greenish, yellow, or olive shields. This grows commonly upon old boards, and is that figured by *Dillen. t. 18. f. 18. B.*

β. The other has a smooth, hard, circular cruft, wrinkled and lobed at the circumference, which adheres closely to rocks and stones. In the centre are numerous shields, of a deeper yellow or orange colour, which, as they grow old, swell in the middle, and assume the figure of tubercles. This is that figured by *Dillen. t. 18. f. 18. A. C.* and is that named by *Hudson L. flavescens Fl. Ang. p. 445.* which we are inclin'd to think, with that ingenious gentleman, is distinct from the preceding; but the great and respectable names of *Dillenius, Linnæus,* and others, are against our opinion.

The inhabitants of *Smoland, in Sweden,* scrape this Lichen from the rocks, and mix it with their tallow, to make golden candles to burn on festival days.

tartareus *L. crustaceus ex albido virescens, scutellis flavescens, margine albo. Sp. pl. 1608. (Dillen. musc. t. 18. f. 13.)*

Large yellow-saucer'd Dyer's Lichen. *Anglis.*

Corcar.

Corcar. *Gaulis.*

Upon rocks frequent, both in the highlands and lowlands.

The crust is thick and tough, either white or greenish-white, and has a rough, warted surface. The shields are yellow, or buff-colour'd, of various sizes, from that of a pin's head to the diameter of a silver penny. Their margins are of the same colour as the crust.

This Lichen is much used by the *Highlanders* in dying a fine claret or pompadour colour.

For this purpose, after scraping it from the rocks, and cleaning it, they steep it in urine for a quarter of a year. Then, taking it out, they make it into cakes, and hang them up in bags to dry. These cakes are afterwards pulverized, and the powder is used to impart the colour, with an addition of allum to fix it.

pallescens
22.

L. crustaceus albicans, scutellis pallidis. *Sp. pl.* 1608. (*Dillen. musc. t. 18. f. 17. A. B.*)

Pale glaucous Lichen. *Anglis.*

Upon walls and rocks common, and sometimes upon the bark of trees.

The crust is of a grey or bluish white colour, spreading closely to the substance on which it grows in the form of a circle, one, two, or three inches in diameter, wrinkled and lobed at the circumference, so as to emulate small united leaves. In the centre of this crust is often found
a greenish

a greenish farinaceous powder, but no shields. This species is therefore *diæcious*.

β. The shields grow on separate crusts, of no regular figure, nor distinguished by those lobed leaf-like margins above-mentioned. They are very small, numerous, and crowded, either of a greenish grey, or lead-color'd, with white rims. This is supposed to be the female kind by *Dillenius*, and the male by *Micheli* and *Linnaeus*.

subfuscus 23 L. crustaceus albicans, scutellis subfuscis, margine cinereo subcrenato. *Sp. pl.* 1609. (*Dillen. musc. t. 18. f. 16. A. B*)

Brownish Lichen. *Anglis.*

On trunks of trees and walls common.

The crust of this is grey or whitish, thin, and smoother when on trees; thicker and rougher when on walls or rocks. The shields are small and numerous, of a brownish colour, surrounded by whitish rims, generally a little crenated on their edges. The disc of the shield sometimes swells and becomes convex, resembling a tubercle, but is still encircled by the white margin. When the shields grow old, the substance of the disc often drops out.

atv 24. L. crustaceus albicans, scutellis nigris albo marginatis. *Huds. Fl. Ang.* 445. an *L. cinereus*? *Lin. Syst. nat.* 13 edit. p. 805. sed *scutellæ sunt, non tubercula.* (*Dillen. musc. t. 18. f. 15. & t. 55. f. 8. ad basin.*)

Black

Black cupped Lichen.

On the bark of trees, and on walls common.

The crust is grey, or ash colour'd, the shields small, numerous and black, with white margins.

β. A variety of this often occurs on walls with a thicker and whiter crust, having shields with wrinkled inflexed margins.

parellus 25 L. crustaceus albus, peltis concavis obtusis pallidis. *Syst. nat. edit.* 13. p. 806. (*Dillen. musc.* t. 18. f. 10.)

Crawfish-eye Lichen.

Upon walls and rocks, but not very common.

The crust spreads closely and widely upon stones and rocks, and is rough, tartareous, and ash-colour'd, of a tough coriaceous substance.

The shields are numerous and crowded, having white or ash-colour'd, shallow, plain discs, with obtuse margins.

The *French* call this Lichen *Parelle*, and dye a red colour with it.

C. * *Imbricati.*

centrifugus 26 L. imbricatus, foliolis obsolete multifidis lævibus albidis centrifugis, scutellis rufo-fuscis. *Sp. pl.* 1609. (*Lin. Flor. Lappon.* t. 11. f. 2. *Dillen. musc.* t. 24. f. 75.)

Greenish chesnut-shielded Lichen. *Anglis.*

Upon the Highland rocks frequent, and in the king's park at *Edinburgh*.

This

This Lichen spreads flat upon the rocks in a circle from two to six inches in diameter, composed of many pale whitish green leaves, running from the centre to the circumference, variously branched, and gradually dilated as they recede from the centre, the branches laciniated on the edges, contiguous to, and lying over, the sides of each other, and obtusely lobed, and crenated at the extremities. These leaves are black underneath, and adhere to the rocks by some very short hairs or radicles, scarcely perceptible.

The fructifications are chefnut colour'd shields, of various sizes, their margin and under sides of the same colour as the leaves. The central shields are the largest, being often of the size of a silver penny, and frequently waved on the edges; the others grow gradually smaller towards the circumference, till they dwindle to a point. The centre of the circle often consists only of minute furfuraceous leaves, which decay first, while those in the circumference still remain, and constitute a broad circular band.

cartilagine- L. imbricatus, foliolis crenatis pallidis cartilagineis
as 27. scutellis planis fulvis. (*Dillen. musc. l. 24. f. 74.*)

Cartilaginous Lichen. *Anglis.*

Upon rocks thinly covered with earth, not unfrequent, as in the king's park. &c.

The leaves are small, stiff, thick, and cartilaginous, laciniated, and obtusely lobed at the ends,
of

of a pale yellow colour, with a tinge of green; sometimes a glaucous colour, and grow upon one another, on the ground or rocks, in clusters, sometimes, but not always, of a circular form.

The shields are of a yellowish red or tawny colour, small at first, and surrounded with an obtuse margin, of the same colour as the leaves, but grow frequently afterwards to be almost as large as the leaves themselves. When dry, or young, they are usually flat; when moistened, or full grown, they become tumid and convex, and so elevated sometimes as to hide or overhang their margins.

The leaves, when dry, are of a yellowish white, and sometimes a glaucous, colour, and smell like old tobacco.

This is certainly a very distinct species from the former, though unnoticed by *Linnaeus*.

saxatilis 28 L. imbricatus, foliolis sinuatis scabris lacunosis, scutellis badiis. *Syst. nat. edit.* 13. p. 806. *Sp. pl.* 1609. (*Dillen. t.* 24. f. 83.)

Grey-blue pitted Lichen. *Anglis.*

Staneraw. *Scotis australibus.*

Upon trunks of trees, rocks, tiles, and old wood, very common.

This forms a circle two or three inches in diameter, consisting of imbricated leaves, variously laciniated,

niated and lobed at the extremities. The upper surface is of a blue-grey, and sometimes a whitish ash-colour, uneven, and full of numerous small pits, or cavities; the under side is black, and covered all over, even to the edges, with short simple hairs, or radicles. Besides the pits above-mentioned, the upper surface is also frequently covered with minute farinaceous tubercles.

The shields are rarely produced; they are of a dark chefnut colour, moderately large when full grown, with their margins turned inward, their out-sides rough, pitted, and of the same colour as the leaves. Sometimes small eminences, or tubercles, are to be seen on the disc of the shields.

Farinaceous tubercles and shields are both found upon the same plant. But the old plants generally produce the shields, and the young ones the farinaceous tubercles. The young ones have also their leaves divided into wider and more obtuse segments.

β. A variety of this Lichen sometimes occurs with leaves tinged of a red or purple colour, called by Ray, *Lichenoides arboreum purpurascens, tenue & læve scutellis majoribus*. R. Syn. 73.

This Lichen is used by finches, and other small birds, in constructing the outside of their curiously-form'd nests.

G g g

L. im-

omphalodes. L. imbricatus, foliolis multifidis glabris obtusis
 29. spadiceo fuscis, punctis vagis eminentibus. *Sp.*
pl. 1609. (*Vail. Paris. t.* 20. *f.* 10. *bona. Dillen.*
musc. t. 24. *f.* 80. *A.-D.*)

Dark purple Dyer's Lichen. Cork or Arcell.
Anglis.

Crotal. Gaulis.

Cen-cerig. Cen dû. *Cambris.*

Upon rocks frequent.

This is so very like the preceding, except in colour, that I have often been tempted to think it only a variety of it. It differs however in the following respects :

It forms a thick widely-expanded crust, of no regular figure, composed of numerous imbricated leaves, of a brown or black purple colour, divided into smaller segments than the preceding; which segments are generally bifid at the extremity, and the black rigid hairs on the under side approach so near their edges as to be visible without turning the leaves. Add to this, that the surface of the leaves is more smooth and shining, and scarce visibly pitted, but only sprinkled with numerous small white dots, or scratches.

The shields are of the same colour, and very like the preceding, their margins a little crisped, and turned inwards, their outside ash-colour'd.

This

This Lichen is much used by the Highlanders in dying a reddish brown colour. They steep it in urine for a considerable time, till it becomes soft, and like a paste; then, forming the paste into cakes, they dry them in the sun, and preserve them for use, in the same manner as is before related of the *L. tartareus*.

fablunensis 30. *L. imbricatus*, foliolis linearibus dichotomis planiusculis acutis nigris, scutellis atris, *Sp. pl.* 1610. (*Dillen. musc. t. 24. f. 81.*)

Small black Cork, or Lichen. *Anglis.*

Upon the rocks on the highland mountains, but not common. It was found in *Breadalbane*, and communicated by my ingenious friend, and fellow-traveller, Mr. *Stuart*.

This very much resembles the preceding in the structure and manner of growth, but the leaves are very small, black, smooth on both sides, and finely divided, and subdivided into numerous thin, narrow, linear segments.

The shields are small and black. This is enough to distinguish it from the foregoing.

olivaceus 31 *L. imbricatus*, foliolis lobatis nitidis lividis. *Sp. pl.* 1610. (*Vail. Par. t. 20. f. 8. Dillen. musc. t. 24. f. 78. A. B.*)

Olive Lichen. *Anglis.*

Upon the bark of trees common, and sometimes upon rocks.

The leaves are smooth and shining, of a glossy olive colour, expanded flat in a circle of one or two inches in diameter, and obtusely lobed at the extremities.

Some specimens are covered in the centre with a crowd of granulated farinaceous tubercles, of the same colour as the leaves. These we never observ'd to produce shields.

Others have numerous concave shields in the centre of the leaves, of a fuscous olive colour, their margins and outsides covered with numerous little smooth warts, or tubercles. The leaves are also springled over with the same kind of tubercles. The shields are rarely found.

There is also a variety of this Lichen, which produces smooth shields, but in other respects similar. It is figured by *Dillenius, Hist. musc. t. 24. f. 77. A.-C.* and by *Michel. t. 51. Ordo XIX.*

crispus 32. *L. imbricatus, foliis lobatis truncatis crenatis atroviridibus, scutellis concoloribus. Syst. nat. edit. 13. p. 806. Huds. Ang. 447. (Dillen. musc. t. 19. f. 23.)*

Curled Jelly Lichen. *Anglis.*

In shady stoney places, and at the foot of walls and rocks.

The substance of this is thick and jelly-like, the colour a black green. The leaves lie upon the ground, one over another, divided into broad obtuse lobes at the extremities, which lobes
are

are nearly entire on the edges in the Spring, but crenated in the Summer.

The shields are of the same colour and substance as the leaves while moist, but reddish when dry, as we observ'd in *Dillenius's* specimens, having small grains or tubercles on their margins. The same kind of tubercles are also found in plenty upon the leaves, which give them a crisped appearance.

Other specimens have granulated leaves only, and produce no shields.

cristatus
33.

L. imbricatus, foliis dentato-ciliatis, scutellis folio majoribus. *Sp. pl.* 1610. (*Dillen. musc. t.* 19. f. 26. *A.-C.*)

Crested Jelly Lichen. *Anglis.*

At the base of walls and rocks, and in shady stoney places.

The leaves lie imbricated upon one another, of a green blue or glaucous colour when moist, lead-colour'd when dry. They are somewhat thick, and succulent when fresh, are plain, and divided into many short lobes at the extremities, having ciliated dents on the edges, and sometimes simple dents, without *cilia*.

The shields grow upon the surface of the leaves, near their base, appearing at first like tubercles, which afterwards dilate, become large, and almost flat, of a reddish brown or chesnut colour, their

their rims of the same colour as the leaves, which rims disappear when the shields are old.

parietinus

34.

L. imbricatus, foliis crispis fulvis, peltis concoloribus fulvis. Sp. pl. 1610. (Dillen. t. 24. f. 76. A-C.)

Common yellow Wall-Lichen. *Anglis.*

Upon walls, rocks, tiles of houses, and upon trunks of trees, very common.

This commonly spreads itself in circles of two or three inches in diameter. The leaves run gradually dilated from the centre to the circumference, expanded flat, and forming a thin crust. They are variously lacinated, their edges curl'd, and incumbent upon each other, and their extremities divided into obtuse crenated segments.

Their colour is either yellow, greenish yellow, or orange; their under side whitish, except at the margins, which are yellow.

The shields are numerous, small, and orange-colour'd, the largest placed in the centre, the smallest next the circumference.

Their disc in the full-grown or old ones is flat, their margin of the colour of the leaves.

It is affirm'd to dye a good yellow or orange-colour, if fixed with allum.

physodes 35

L. imbricatus, laciniis obtusis subinflatis. Sp. pl. 1610. (Michel. gen. t. 50. Ordo 25. f. 1. 2. Dillen. musc. t. 20. f. 49. A-D.)

Inflated

Inflated Lichen. *Anglis.*

Upon the trunks of old trees, upon rocks, and sometimes upon the ground.

The leaves are laxly imbricated, and frequently grow in a circle. They are variously divided, and terminated with obtuse bifid, and sometimes palmated, lobes; their upper surface convex and white, their under one black and smooth. But what distinguishes this Lichen more particularly is, that all the leaves and their segments are hollow, or composed of two membranes, a little distant from each other. The extremities of the segments in the younger leaves are inflated, the membranes which compose them being united at the end, so that if those extremities are cut transversely with a penknife, the two membranes will be distinctly seen, and a cavity between them.

The extremities of the old leaves are open, and the upper membrane a little extended, waved on the edges, and covered with a white farinaceous powder; sometimes also the edges of all the segments are covered with the like powder. This is probably one of the sexes, as, according to *Dillenius*, it does not produce shields.

Other specimens, which have no powder, produce shields of a reddish brown colour, standing on very short footstalks, their outside of the colour of the leaves. These shields are seldom to be found.

L: im.

stellaris 36 L. imbricatus, foliolis oblongis laciniatis angustis, cinereis, scutellis pullis. *Sp. pl.* 1611. (*Michel. gen. t.* 43. *ord.* 23. *f.* 2. *Dillen. musc. t.* 24. *f.* 70. *A.C. non bene.*)

Starry Lichen. *Anglis.*

Upon the bark of trees frequent.

The leaves form a circle an inch or two in diameter, of a grey glaucous colour when fresh, but turning whiter when dry. They extend from the centre to the circumference, gradually expanded, and divided into many long, narrow segments, imbricated, or lying with their edges over another. They adhere closely to the bark by black hairs on the under side.

The shields grow in the middle of the circle, the largest in the centre, and gradually diminishing towards the circumference. When young they are white or grey, being covered with a thin, mealy pellicle; but as they enlarge and grow older, the pellicle disappears, and they become black, surrounded with a margin of the same colour as the leaves.

Specimens are sometimes found having warts only in the centre of the circle, and no shields.

β. There is a variety of this Lichen which forms larger circles, of four inches or more in diameter, the leaves rue-colour'd when fresh, the segments more rigid, and not so closely united at the extremities, the shields larger, covered at first

first with a grey pellicle, but afterwards turning black. As they become old their outsides and margins are foliaceous, or covered with minute leaves, so that they acquire a crisped appearance. The specimens of this, after being kept for some years in paper, lose their fine glaucous colour, and turn to a russet grey. *Haller* and *Dillenius* make this a distinct species, and perhaps it is so, but there seem to be hardly sufficient limits. The latter has given so ill a figure of it, that I should hardly have imagined it was designed for it, if I had not seen the specimens of the author. See *Dillen. musc. t. 24. f. 71.* That of *Micheli tab. 43. ord. 23. f. 2.* (which was supposed to be intended for the preceding) gives a much better idea of it.

pullus 37. *L. imbricatus*, foliolis perangustis implexis laciniatis fuscis, supernè convexis, apicibus demissis, scutellis pullis. (*Dillen. musc. t. 24. f. 69. Micheli gen. t. 51. ord. 30. f. 6.*)

Small-cut brown Lichen. *Anglis.*

Upon rocks not unfrequent, as in the king's park, &c.

This grows horizontally upon rocks, forming a brown crust, composed of numerous, very small, finely lacinated, and densely imbricated smooth leaves, having their upper surface convex, and their segments and extremities all deflex'd. Their under side whitish.

The

The shields are of a dark, blackish, brown color; their margins paler, and a little crisped.

This is a very distinct species, though unnoticed by *Linnaeus*.

plumbeus 38 *L. imbricatus*, foliis obtusè lobatis plumbeis, sub-
tus cœruleo-spongiosis, scutellis ex rubro ferru-
gineis. (*Dillen. t. 24. f. 73. malè. Michel. gen.*
pag. 91. t. 43. Ord. 23 f. 1. melior. & fig. nost.)

Lead-colour'd spongy Lichen. *Anglis.*

On trunks of trees about *Drumlanrig* frequent, and in the deep cleugh called *Berntimpenn Linn*, in the parish of *Kirkpatrick*, about five miles from *Moffat*. *Dr. Burges*.

The leaves are laciniated, obtusely lobed and imbricated, of a blue-grey colour, and soft, thick, elastic substance, like cork or leather, having innumerable blue, spongy hairs on the under side, which frequently extend beyond the extremities of the leaves, and elevate them as it were upon a cushion.

The shields are of a brownish red colour, small, numerous, and crowded, their margins of the colour of the leaves, and crenated when old.

Some specimens, besides the shields, have clusters of farinaceous powder on the edges of the leaves.

This Lichen is generally two or three inches, but sometimes even eight or nine inches broad.

The

Lichen Burgesii. P. 827.



Lichen Plumbeus. P. 826.

W. G. Griffiths del.

P. Mazell sculp.

The leaves, when dry, turn either ash-colour'd, or yellowish white; and, in long preservation, the blue spongy hairs on the under side become white; in which state *Dillenius* described it, for we saw, in his collection, the very specimen to which the figure I have above [cited, and his description, refer.

D * *Foliacei.*

Burgessii 39 L. foliaceus subimbricatus crispus, peltis elevatis muricato-crispis fundo depresso plano. *Lin. Syst. nat. edit. 13. p. 807. (Vide fig. nost.)*

Crowned Lichen, or *Burgess's* Lichen. *Anglis.*

Upon the trunks of hazel and old birch trees, on the bank of a rivulet called *Duff-Kinnel*, near *Barntimpen*, in the parish of *Kirkpatrick*; and in a shady wood called the *Mollin-Linn*, in the parish of *Johnstone*, in *Dumfriesshire*, first discover'd by the Rev. Dr. *Burgess*, of *Kirkmichael*, in the same county.

This consists of thin, membranaceous, pellucid, dull green leaves, standing somewhat erect, curled, lobed, and dented on the margins.

The shields are flat, smooth, of the same colour as the leaves, supported on very short peduncles, and crowned with foliaceous crisped margins.

When the plant is dry it assumes a somewhat different appearance. The leaves become of a brown purple colour, opaque, and a little hoary underneath;

underneath; the shields are a little sunk or concave, and of a dark reddish brown or chestnut colour.

ciliaris 40. *L.foliaceus erectiusculus, laciniis linearibus ciliatis, scutellis pedunculatis crenatis. Sp. pl. 1611. (Loesel. Pruss. 171. f. 50. Vail. Paris. t. 20. f. 4. Dillen musc. t. 20. f. 45.)*

Hairy or ciliated Lichen. *Anglis.*

On trunks of trees frequent.

It grows in loose, widely-expanded tufts, composed of stiff leaves, variously divided into narrow segments, which are ciliated on the edges with long black, or grey hairs. The colour of the leaves, when dry, is grey, sometimes tinged with brown; when wet, a fine glaucous or sea-green; the under side white.

The shields stand on very short footstalks. The colour of the disc, when young, is grey, afterwards dark brown, and when old, large and black, surrounded with a grey or glaucous dented margin.

Some specimens are sprinkled over with many small warts, of the same colour as the leaves.

β. There is a small variety of this, the colour of which is invariably white, whether moist or dry. The leaves are softer, shorter, and more finely divided.

The shields are small and black, with hardly any peduncles, and their margins not dented.

This

This is figured by *Dillenius*, *Hist. musc.* t. 20. f. 46. and is made a distinct species by *Scopoli* in his *Fl. Carniol.* No. 1406, under the name of *L. tenellus*.

islandicus 41 *L. foliaceus ascendens laciniatus, marginibus elevatis ciliatis. Sp. pl.* 1611. (*Dillen. musc.* t. 28. f. 111. ♂ *var. minor* t. 28. f. 112. *Oeder. Fl. Dan.* t. 155. opt.)

Eatable Iceland Lichen. Eryngo-leav'd Lichen. *Anglis.*

It grows upon the ground on many mountains, both in the highlands and lowlands, as on the *Pentland* hills, on a hill called *Scrape*, near *New-Posso*, on *Creg-chaillech*, in *Breadalbane*, &c.

It consists of nearly erect leaves, about two inches high, of a stiff but flexible substance when dry, soft and pliant when moist, variously divided, without order, into broad distant segments, bifid or trifid at the extremities. The upper or interior surface of the leaves is concave. chestnut-colour'd, smooth, and shining, but red at their base; the under or exterior surface is smooth and whitish, a little pitted, and sprinkled with very minute black warts. The margin of the leaves, and all the segments from bottom to top, are ciliated with small, short, stiff, hair-like spinules, of a dark chestnut colour, turning towards the upper side.

The shields are very rarely produced. They grow out

out of the very extremity of the segments, of a chesnut colour, very large, broad, and convex.

♀. Sometimes the leaves are much narrower, and more laciniated, in which state it is figured by *Dillenius*, t. 28. f. 112.

And some authors teach, that the edges of the leaves, when young, are united throughout, so as to be tubular and cylindrical; in which case the plant assumes the appearance of a minute dark brown, ciliated or prickly shrub, about an inch or two high, very much branched, and the branches entangled together. Such a plant is figured by *Dillenius*, t. 17, f. 31.

But as we have seen this in fructification, and believe it to be a distinct species, we shall rank it in its proper place, under the division of *L. fruticulosi*.

N. B. The plant figured by *Dillenius*, t. 17. f. 32, and which is cited by *Linnaeus* as a variety of the *L. Islandicus*, must be a mistake, for we have examined *Dillenius*'s specimen, which corresponds to the figure, and found it a very different species, belonging properly to the last division of this genus, and which we shall describe in order.

The *L. Islandicus* is used both for food and physic. The inhabitants of *Iceland* take a decoction of the fresh leaves in water, in the Spring season, to purge away noxious humours, which is said to operate powerfully. But, when dry'd, the plant acquires a very different quality. The
same

same people then grind it to powder, and eat it as common food, boiling it either in milk or water, or making it into bread.

Made into broth, or gruel, it is said to be very serviceable in coughs and consumptions, for which purpose it is much used at this time in *Vienna*, according to *Haller* and *Scopoli*.

pulmonari-
us 42.

L. foliaceus laciniatus obtusus glaber, supra lacunosus, subtus tomentosus. Sp. pl. 1612. (Michel. gen. t. 45. ord. 14. Dillen. t. 29. f. 113. opt.)

Lungwort Lichen. *Anglis.*

Hazleraw. *Scotis australibus.*

Upon the trunks of old trees, in shady woods.

The leaves are as broad as a man's hand, of a leathern substance, hanging loose from the trunk on which it grows, and laciniated into wide angular segments.

The upper surface is reticulated with large inosculating wrinkles, and the space between the wrinkles is sunk into deep pits, or cavities; which cavities form whitish tumors, almost smooth on the under side of the leaf, whilst the vallies between them are covered with a thick, tawny, or fuscous down.

The natural colour of the leaves, when fresh, is green, but in drying they turn first to a glaucous, and afterwards to a fuscous colour.

The

The shields are of a brownish red colour, and grow sessile out of the margins of the segments, rarely out of their surface. These shields are but seldom produced.

The wrinkles and margins of the segments of those same leaves, which produce shields, are often covered with farinaceous tubercles.

This Lichen has an astringent bitter taste, and, according to *Gmelin*, is boiled in ale in *Siberia*, instead of hops. The ancients used it to cure coughs, asthmas, and other disorders of the lungs, but it is out of the modern practice.

furfuraceus L. foliaceus decumbens furfuraceus laciniis acutis, 43. subtus lacunosis atris. *Sp. pl.* 1612. (*Buxb. cent. t. 7. f. 1. Michel. gen. t. 38. Ord. 4. f. 1 Dillen. musc. t. 21. f. 52. opt.*)

Grey-horned branny Lichen. *Anglis.*

Upon trunks of trees and old pales, but not very common.

The leaves grow in clusters, either reclining or a little erect, laciniated, and branched like stag's horns, soft and pliant when moist, stiff, but not inflexible when dry. The edges of the segments are turned downward, whence the upper side of the leaves is convex, and the lower concave; the first of a sordid grey or ash-colour, covered with rough farinaceous spinules, the other black and reticulated.

The

The shields are rarely found, but grow sessile upon the leaves, large, hollow, of a brownish black on the inside, and the colour of the leaves on the outside.

The leaves have a permanent bitter taste.

farinaceus

44.

L. foliaceus erectus compressus ramosus, verrucis marginalibus farinosis. *Syst. nat. edit.* 13. p. 807. *Sp. pl.* 1613. (*Vail. Paris. t.* 13. 14. 15. *Dillen. musc. t.* 23. f. 63. opt. A-E.)

Narrow-cut warty Lichen. *Anglis.*

On trunks of trees frequent.

The leaves grow in a cluster, erect, compressed, from one to three inches high, smooth on both sides, slightly grooved and pitted, and variously divided into narrow linear segments, pointed at the extremities.

Their substance is somewhat rigid, especially when dry; their colour, when moist, a pale glaucous, when old or dry, whitish.

On the edges of the leaves are many small white farinaceous warts, at first concave, afterwards larger, more prominent and flat, appearing as if little portions of the substance of the leaves had been cut off where they grow.

Dillenius seems to think this may be only one of the sexes of the following, as that produces no farinaceous tubercles, and this properly no shields. *Scopoli* is of the same opinion.

H h h

It

It varies very much in the breadth of the leaves, and number of the segments.

calicaris 45 L. foliaceus erectus linearis ramosus lacunosus convexus mucronatus. *Sp. pl.* 1613. (*Moris. hist. f. 15. t. 7. f. 5. bona. Dillen. musc. t. 23. f. 62.*)
L. rostratus. Scopol. Carniol. No. 1382.

Beaked Lichen. *Anglis.*

It grows sometimes upon trees, but more frequently upon rocks, especially on the sea-coasts, but not very common.

This is smooth, glossy, and whitish, more pitted and channel'd, and much more stiff and rigid than the foregoing; but what more particularly distinguishes it from the preceding is, that it produces flat or convex shields, of the same colour as the leaves, very near the summits of the segments, which are acute and rigid, and being often reflected from the perpendicular by the growth of the shields, appear from under their rims, like a hooked beak.

If this be a variety of the preceding it must be the *male*, according to *Linnaeus*, but the *female* according to *Dillenius*.

It will dye a red colour, and promises, in that intention, to rival the famous *L. Roccella*, or *Argol*, which is brought from the *Canary* islands, and sometimes sold at the price of 8*ol.* sterling per ton. It was formerly used instead of starch to make hair-powder.

L. fo-

fraxineus 46 L. foliaceus erectus oblongus lanceolatus sublacinatus lacunofus glaber, scutellis subpedunculatis. *Sp. pl.* 1614. (*Moris. hist. f.* 15. t. 7. f. 3, 4. *Tournef. Instit.* 549. t. 325 f. A. B. *Dillen. musc.* t. 22. f. 59. opt. *Michel. gen.* t. 36. f. 1. bona.)

Great long-leaf'd wrinkled Lichen. *Anglis.*

Upon the trunks and branches of trees, particularly of oaks and ashes, frequent.

The leaves of this are from half an inch to an inch and a half broad, and, in fair specimens, four or five inches long, divided into long lanceolate segments, wrinkled and pitted on both sides with oblong deep cavities, of a rigid substance and glaucous colour.

It produces plenty of shields, both in the margins and surface of the leaves, at first concave, afterwards larger and flatter, of a pale whitish colour, supported on short peduncles, composed of the membrane of the leaf a little produced.

The leaves are sometimes covered with a green farinaceous powder, and are sometimes proliferous, producing clusters of small young leaves out of their edges.

prunastri 47. L. foliaceus erectiusculus lacunofus, subtus tomentosus albus. *Sp. pl.* 1614. (*Vail. Paris.* t. 20. f. 11, 12, & 7. *Dillen. musc.* t. 21. f. 55 & 54.)

Common ragged hoary Lichen. *Anglis.*

It grows upon all sorts of trees, but is generally most white and hoary on the flœ and old plumb-trees, or upon old pales.

This is the most variable of the whole tribe of Lichens, appearing different in figure, magnitude and colour, according to its age, place of growth, and sex.

The young plants are of a glaucous colour, slightly divided into small acute crested segments. As they grow older they are divided like a stag's horn, into more, and deeper segments, somewhat broad, flat, soft, and pitted on both sides, the upper surface of a glaucous colour, the under one white and hoary.

The male plants, as *Linnaeus* terms them, are short, seldom more than inch high, not hoary on the under side, and have pale glaucous shields, situated at the extremities of the segments, standing on short peduncles, which are only small, stiff portions of the leaf produced.

The female specimens have numerous farinaceous tubercles both on the edges of their leaves, and the wrinkles on their surface.

The pulverized leaves have been used as a powder for the hair, and also in dying yarn of a red colour.

juniperinus L. foliaceus laciniatus crispus, fulvus, peltis lividis. *Sp. pl.* 1614. (*Dillen. musc. t.* 24. *f.* 76. qui *L. parietinus* est, huic valde similis.)

48.

Common

Common yellow Tree Lichen. *Anglis.*

Upon the trunks and branches of elms, and many other trees, common. *Linnaeus* says it is very frequent on the Juniper.

The only Lichens that have any resemblance with this, are the *L. candelarius*, and the *L. parietinus*, with the last of which it seems to have been confounded by some authors. The *L. candelarius* has either a farinaceous or a wrinkled crust for its ground, according to its sex. The *L. parietinus* is composed of a thin crust of close imbricated leaves. This has lax elevated leaves, of a greenish yellow colour, curled and lacinated on the edges. The shields are either of a greenish-yellow, or an olive colour.

The *Gotland-Swedes* dye their yarn of a yellow colour with it, and give it as a specific in the Jaundice.

caperatus
49.

L. pallide viridis rugosus margine undulatus. Sp. pl. 1614. (Moris. hist. 3. p. 633. f. 15. t. 7. f. 1. sine scutellis. Dillen. musc. t. 25. f. 97. Michel. gen. t. 48. f. 1.)

Sulphur-green Rose Lichen. *Anglis.*

Upon trunks of trees and rocks frequent.

The leaves generally grow in a flat rosaceous circle, from an inch even to a foot in diameter, greatly wrinkled and plaited in the centre, and divided into obtuse crenated lobes at the extremities, of a sulphur sea-green colour, their under side smooth

smooth and black, except the edges, which are pale brown.

The shields are very rare, and found only on old specimens, which are widely spread, but do not then preserve their circular form. They are large, concave, of a brown red colour, and smooth within; pale, rough, and leprous without.

The same leaves which bear shields, as well as those which do not, have their whole surface covered, and their margins swelled, with *Pollen*.

glaucus 50 *L. foliaceus depressus lobatus glaber, margine crispo farinaceo. Sp. pl. 1615. (Dillen. musc. t. 25. f. 96.)*

Smooth endive-leav'd Lichen. *Anglis.*

Upon the ground amongst stones and rocks, but not common. Mr. *Yalden* gathered it near *Mosfat*, and Mr. *Stuart* in *Breadalbane*.

The leaves are very thin, variously lacinated, their segments indented, and crisped or curled on the edges, like endive. Their upper side is smooth and glossy, of a white glaucous colour, except at the extremities, which are often fuscous. The under side is also smooth and glossy, black in the middle, but fuscous at the extremities. Notwithstanding this smoothness of the leaves, the upper surface is a little pitted, and the under one wrinkled.

The

The curled margins of the segments are slightly farinaceous, but no other part of the leaves.

The shields we have never yet seen. *Dillenius* describes them as extremely small and fuscous, but supposes that they were not arrived to their full size.

It is so nearly related to the Lichen *perlatus* next described, that I am tempted to think it may be only a variety of it.

perlatus 51 L. foliaceus repens lobatus glaber, subtus atris, scutellis pedunculatis integris. *Huds. Fl. Ang.* 448. *Lin. syst. edit.* 13, p. 808. (*Michel. gen.* t. 50. *ord.* 24. *f.* 1. *Vail. Paris.* t. 21. *f.* 12. *Dillen. musc.* t. 20. *f.* 39. *A. E. opt.*)

Common blue curled Lichen. *Anglis.*

Upon the trunks of oaks and other trees very common.

The leaves are of a glaucous colour when moist, of a whitish ash-colour when dry, smooth on the surface, but not glossy, divided into obtuse sinuated segments, elevated and curled on the edges. The under side, just at the extremities, is smooth and of a brownish black, all the rest quite black, rough and hairy.

But the principal character of this species is, that the meandering margins of the interior leaves are elevated and reflexed, and swell'd with a whitish farinaceous powder. Besides which powder

der on the margins, there are sometimes found in the *same* specimens, but more commonly in *distinct* ones, upon the disc of the leaves, many plain farinaceous tubercles.

The shields are very rarely seen, notwithstanding the plant is so common.

They are large, concave, and supported on short peduncles. Their inside is smooth and fuscous, their outside of the colour of the leaves, wrinkled in the dry plants, smooth in the fresh ones, and their margins lobed in the old ones.

Hence it appears that this differs chiefly from the preceding in not having the upper side of the leaves glossy, in having their under sides hairy, their margins elevated and tumid with *Farina*, and in producing sometimes, tho' very rarely, large shields, supported on short peduncles, which have never yet been discovered in the former.

vespertilio
52.

L. gelatinosus membranaceus rugosus lobatus atrovirens, scutellis confertis rufis. L. nigrescens. Hudf. Fl. Ang. 450. (Dillen. musc. t. 19. f. 20. opt.)

Bat's-wing Lichen. *Anglis.*

On trunks of trees frequent, especially on the north side, and sometimes upon rocks.

This consists of thin, wrinkled, membranaceous, and gelatinous leaves, expanded in a circle, of a black green colour, resembling a bat's wing, slightly

slightly divided into very obtuse lobes at the margin.

The shields are of a fuscous red colour, small, numerous, and crowded, and grow near the centre of the leaves.

We have observed other specimens, destitute of shields, the leaves of which have been granulated with an infinite number of small tubercles, of the same colour with the leaves.

fascicularis L. foliaceus gelatinosus, tuberculis turbinatis fasciculatis fronde majoribus. *Lin. mantiss.* 133. *Syst. nat. edit.* 13. p. 808. (*Dillen. musc. t.* 19. f. 27.)

53.

Little palmated cluster Lichen. *Anglis.*

Observ'd frequently in shady places on the north side of the trunks of trees, particularly of the ash, by the Rev. Dr. *Burgefs*, of *Kirkmichael*, in *Dumfriesshire*.

The leaves grow in erect clusters, hardly a quarter of an inch high, of a blackish green colour, gelatinous and pellucid, like a *Tremella*, widest at their extremities, and slightly palmated.

The fructifications are placed upon the very tips of the segments, and therefore appear as if supported on short peduncles. They are numerous, crowded, and large for the size of the leaves, appearing at first small and convex, like tubercles, afterwards larger and flat, and, last of all, concave, with obtuse margins. They are of the

the same colour and substance as the leaves when moist, but reddish brown when dry.

This Lichen continues the whole year, but is scarce visible, except in moist weather.

tremelloi-
des 54.

L. foliaceus membranaceus pellucidus; foliorum laciniis margine fimbriato crispo. TREMELLA *lichenoides*. Lin. Sp. pl. 1625. (*Moris. hist. 3. p. 632. f. 15. t. 7. f. 4. Michel. gen. p. 26. tab. 38. ord. III. Dillen. musc. t. 19. f. 31.*)

Tender membranaceous Lichen. *Anglis.*

It grows very common upon the ground, intermixed with *Hypnums* and other mosses.

The leaves are very thin and transparent, from half an inch to an inch high, either of a reddish brown, or a dark blue slate color, variously lacinated, the segments curled and fringed, and sometimes ciliated on the margins.

The shields are very rarely found. They have, however, been found, which is enough to reduce the plant to this genus. They are very minute, numerous, and of a reddish colour.

The leaves vary greatly in figure, according to age and place of growth.

β. Sometimes they are broader, and their segments more obtuse, as figured by *Dillenius, hist. musc. t. 19. f. 32.*)

γ. Sometimes they grow erect in clusters, very short, the segments broadest at the extremities, and finely dented, as *Dillen. musc. t. 19. f. 34.*

Lastly,

δ. Lastly, they are found with acute segments, ciliated on the edges, as *tab. 19. f. 35. Dillen. musc.*

But in all these circumstances the plant may be readily known, by assuming, in its dry state, a glaucous or slate colour.

E * *Coriacei.*

resupinatus L. coriaceus repens lobatus, peltis marginalibus
55. posticis. *Sp. pl.* 1615. (*Michel. gen. t.* 44. *Ord.* 13. *f.* 1. 2. *Dillen. musc. t.* 28. *f.* 105. *opt.*)

Livid brown Lichen, with reversed shields.

Upon the ground in stoney places, and often upon trunks of trees. On the stones of an old dyke, at the bottom of the *Scarbrae-bank*, and on trees near the head of *Glen Earwood*, in *Dumfriesshire*, in plenty. *Dr. Burgess.*

The leaves are laciniated, and obtusely lobed on the margins. They are smooth, and of a brown olive colour on the upper side, and smooth and buff-colour'd underneath.

The *peltæ*, or shields, grow out of the elevated margins of the segments, in plenty, great and small intermix'd. They are nearly of a semi-circular figure, and of a chocolate colour; but what is singular, and distinguishes this species at once, is, that they lie on the under side of the segments, with their faces downwards. The

upper

upper side of the shields, or their back part, is of the same colour as the leaves, and wrinkled.

Other specimens, destitute of shields, have the margins of their leaves crisped and farinaceous, and sometimes their disc is also covered with farinaceous warts.

This is probably one of the sexes, as the substance and colour of the leaves prove it to be only a variety of the same species. See *Dillenius's* figures of the plant in this state, *hist. musc. t. 28. f. 105. B. C.*

venosus 56. *L. coriaceus repens ovatus planus, subtus venosus villosus, peltis marginalibus horizontalibus. Sp. pl. 1615. (Dillen. musc. t. 28. f. 109. Michel. gen. t. 44. ord. 12. f. 3 & 5.)*

Little dark-vein'd Lichen. *Anglis.*

We owe the discovery of this to the diligent researches of Dr. *Burgess*, who found it on moist rocks, and under shady brows in several parts of *Glenkill Linn* and *Glenkill-Burn*, in the parish of *Kirkmichael*, in *Dumfriesshire*. Elsewhere he informs me he has never yet seen it.

The leaves are about half an inch long, flat, smooth, and wedge-shap'd, or dilated from the base towards the extremity, commonly entire on the edges, but sometimes divided into a few short obtuse lobes. Their upper surface, while fresh, is of a fine green; when dry, of an ash-colour. Their under side is white, reticulated with

with thick, swelling, dark, fuscous, downy veins, which unite at the base of the leaf.

The shields grow out of the margin of the leaf, sessile, horizontal, plain, circular, and of a reddish black colour.

caninus 57. *L. coriaceus repens lobatus obtusus planus, subtus venosus villosus, pelta marginali ascendente. Sp. pl. 1616. (Moris. hist. 3. p. 632. sect. 15. t. 7. f. 1. Vail. Paris. t. 21. f. 16. Dillen. musc. t. 27. f. 102. opt.)*

Ash-colour'd ground Liverwort, or Lichen. *Anglis.*

It grows upon the ground amongst moss, at the roots of trees in shady woods, and also in heaths and stoney places frequent.

The leaves are large, gradually dilated towards the extremities, and divided into roundish elevated lobes. Their upper side, in dry weather, is ash-colour'd, in rainy weather of a dull fuscous green colour; their under side white and hoary, having many thick downy nerves, from which descend numerous long white pencil-like radicles.

The *peltæ*, or shields, grow at the extremities of the elevated lobes, shap'd like the human nail, of a roundish oval form, convex above, concave beneath; of a chocolate colour on the upper side, and the same colour as the leaves on the under.

The

The same leaves which produce shields are sometimes sprinkled with small grains or warts upon the surface.

There are two varieties of this Lichen worthy to be noticed.

rufescens β. The first has thicker, stiffer, and smaller leaves, divided into narrower and deeper segments, having the margins sinuated and curled inwards. The colour of this is darker than the foregoing, and dries of a reddish brown. The under side is more downy, the nerves less distinct, and sometimes not visible, the radicles almost black. The leaves of this are also sometimes sprinkled with small grains, not farinaceous. See *Dillen. t. 27. f. 103. Michel. gen. t. 44. ord. 12. f. 2.*

Reddish Ground Liverwort. *Anglis.*

This is more common than the foregoing.

- polydacty-
- lon γ. The other variety has leaves not above an inch or two long, but, in proportion to its size, divided into more and deeper lobes, each of which bears one and sometimes two shields. In other respects it differs little from the first. See *Dillen. musc. t. 28. f. 107 & 108.*

Many-fingered ground Liverwort. *Anglis.*

This occurs but seldom.

The *L. caninus* has a disagreeable musty taste. Half an ounce of the leaves, dry'd and pulverized, and mixed with two drachms of powdered black pepper, compose the once-celebrated *Pulvis antityssus*, formerly much recommended by

by the great Dr. *Mead*, for the cure of canine madness. This medicine was to be divided into four equal portions, one of which was to be taken by the patient every morning, fasting, for four mornings successively, in half a pint of warm cow's milk; after which he was to use the cold bath every morning for a month.

It is much to be lamented that the success of this medicine has not always answered the expectation. There are instances where the application has not prevented the *Hydrophobia*; and it even uncertain whether it has been at all instrumental in keeping off that disorder.

apbtosus 58 L. coriaceus repens lobatus obtusus planus, verrucis sparsis, pelta marginali ascendente. *Sp. pl.* 1616. (*Dillen. musc. t. 28. f. 106.*)

Green-ground Liverwort, with black warts. *Anglis*

It grows upon the ground at the roots of trees in woods, and in other stoney and mossy places.

Mr. *Xalden* gathered it at the foot of the *Pentland* hills.

It differs very little from the *L. caninus*, and some authors make it only a variety of it.

The leaves, when fresh, are of a remarkable fine green colour, but turn glaucous, or blue-grey, when dry; their surface is sprinkled over with black-green warts, which are larger and more distinct than in the *L. caninus*. Their under side is downy, almost black about the centre, with
fibrous

fibrous radicles, but whitish or buff-colour'd near the margins, and generally, but not always, destitute of those nerves or veins which are so manifest in the *L. caninus*. The shields, or *peltæ*, are similar to those of the last-mentioned.

Dillenius's specimen of this plant, in his collection at *Oxford*, is now, by keeping, turned to a brown ash colour; the warts of the same colour, a little impress'd, or sunk into the substance of the leaf.

Linnaeus informs us, that the country people of *Upland*, in *Sweden*, give an infusion of this Lichen in milk, to children that are troubled with the disorder call'd the *Thrush*, or *Aphthæ*, which induced that ingenious naturalist to bestow upon it the trivial name of *aphtosus*.

The same writer also teaches, that a decoction of it in water will purge upwards and downwards, and destroy worms.

sylvaticus
59.

L. coriaceus repens laciniatus lacunofus, peltis marginalibus adscendentibus. Lin. syst. nat. edit. 13. p. 808. Hudsf. Fl. Ang. p. 453. (Dillen. musc. t. 27. f. 101. Michel. gen. t. 43. Ord. 11. foliis nimis latis.)

Villous-wood Lichen. *Anglis.*

In shady woods about the roots of trees frequent, as in *Glen-Earwood*, and other places about *Kirk-michael*, in *Dumfriesshire*, in plenty. *Dr. Burgess.*

The

The leaves are variously laciniated, in a good measure like the radical leaves of the *Senecio Jacobæa* or common ragwort; when young and fresh, of a dull green, but, when old or dry, of a fuscous or reddish brown colour. Their upper side is smooth and pitted, their under one covered with a dark fuscous spongy down, almost black towards the base of the leaves, but light-brown or buff-colour'd near the extremities of the segments. Interspersed among this down are many little holes or cavities, which appear like round white points or dots.

The shields, or *peltæ*, are very rarely found. They grow at the extremities of the segments, of a roundish or oval form, very small, and chesnut-colour'd. Besides which shields, the disc of the leaves, and the prominent wrinkles on the surface, are often sprinkled with brownish or whitish farinaceous tubercles. In one specimen we observed these tubercles, and the little holes amongst the down, of a bright yellow colour.

The dry leaves, when soak'd in water, yield a strong urinous smell.

horizontalis 60.

L. coriaceus repens lobatus obtusus glaber, peltis marginalibus horizontalibus planis. Syst. nat. edit. 13. p. 808. Hudf. Ang. 453. (Michel. gen. t. 44. ord. 12. f. 1. & f. 6. Dillen. musc. t. 28. f. 104 Oeder. Dan. t. 533. opt.)

Brown flat-shielded Lichen. *Anglis.*

On moist shady rocks, and about the roots of trees, not uncommon; as in the *Knock-Linn*, *Glenkill-Linn*, and many other places in the parish of *Kirkmichael*, in *Dumfrieshire*. Dr. *Burgess*.

The leaves, when young and fresh, are of a dull or fuscous green colour; when old or dry, of a brown red colour, widest towards the extremities, and obtusely lobed. The under side of the leaves is every where reticulated with dark fuscous downy veins, except at the extremities of the segments, which are destitute of veins, and a little downy and white when fresh, buff-color'd when dry, and furnished with a few fibrous radicles.

The shields grow out of the ends and margins of the segments, a little elevated, and are oval, flat and horizontal, of a chocolate colour on the surface, but whitish or buff underneath.

The female varieties of this Lichen have undulated curled farinaceous margins, and sometimes the disc of their leaves is sprinkled with warty grains. See *Dillen*. t. 28. f. 104. C.

scrobiculatus 61.

L. coriaceus repens lobatus obtusus, supernè scrobiculatus verrucosus, internè villosus tumoribus albidis. (*Michel. gen. t. 49. ord. 21. Dillen. musc. t. 29. f. 114.*) *L. scrobiculatus. Scopol. Carniol. n. 1391.*

Pitted warty Lichen, with broad glaucous leaves.
Anglis.

Aikraw.

Aikraw. *Scotis australibus.*

About the trunks and roots of trees not uncommon, often mixed with the *L. pulmonarius*. We have also seen it sometimes in stoney places, and at the foot of rocks.

The leaves spread themselves a palm's breadth, or more, divided into broad segments, obtusely lobed at the extremities, of a bluish green or glaucous colour when fresh, and greenish ash colour when dry.

The upper side is sunk into irregular pits or cavities, and the disc of the leaves, especially near the extremities of the segments, sprinkled with many grey farinaceous warts; and frequently the waved margins of the leaves are covered with the same colour'd farinaceous powder.

The under side of the leaves is downy, without veins, and sprinkled with white spots. The down is fuscous, spongy, and thickest towards the base of the leaves, but thinner and whitish, or buff-colour'd towards the extremities. The white spots are nothing else but small protuberances, occasioned by the cavities on the upper side, and which, being covered with less down than the other parts, appear white.

The shields are very rarely produced. They grow upon the disc of the leaf; those which I saw not larger than a small pin's head, concave and red within, farinaceous and buff-colour'd without.

This species is not described by *Linnaeus*.

læte-virens L. coriaceus repens lobatus obtusus glaber læte-
62. virens, subtus avenius, scutellis fulvis. (*Dillen.
musc. t. 25, f. 98.*)

Lovely-green Lichen, with reddish shields. *Anglis.*

Upon the trunks and roots of trees in moist shady places not uncommon, and sometimes upon rocks in shady and mossy places.

The leaves are two or three inches long, expanded contiguously to the breadth of a man's hand, or more. They are variously lacinated, and divided into round obtuse crenated lobes at the extremities. Their substance is thin, but coriaceous; their upper side smooth, without pits, and of a fine green colour; the under side whitish, or buff-colour'd, smooth at the margins, but covered every where else with a slight tawny down, mixed with pale fibrous radicles.

The shields are numerous, of various sizes, and grow upon the disc of the leaves. At first they appear only like small tubercles, or *papillæ*, with a point in the centre. Afterwards they dilate, and become some of them 1-gd of an inch in diameter, of a tawny red colour, surrounded with a greenish margin, concave at first, but almost plain when old.

Such is the state of the recent plant, but, when dry'd, the leaves change first to a greenish ash-colour,

colour, and afterwards to a fuscous or livid ash-colour, and the shields to a brown red.

This species has escaped the notice of *Linnaeus*.

glomuliferus 63.

L. coriaceus repens laciniatus glaber, laciniarum axillis orbicularibus, scutellis fulvis & glomulis atroviridibus.

L. laciniatus. Hudf. Fl. Angl. p. 449.

L. amplissimus. Scopol. Carniol. edit. 2. n. 1393. (Michel. gen. t. 46. ord. 17. bona. Dillen. musc. t. 26. f. 99. opt.)

Pale blue scallop'd Lichen, bearing dark green balls. *Anglis.*

Upon the trunks and roots of trees, in shady woods, but not common.

The leaves are four or five inches long, procumbent, and contiguous to each other, dilated towards the extremities, and widely expanded, for the most part in a circular form. They are variously laciniated, and terminated with obtuse crenated lobes. The *axillæ*, or angles of the segments, are circular, which is a singular character. Their substance is thick, tough, and coriaceous; the surface smooth, and without pits. Their colour on the upper side, when fresh, a pale cinereous blue; when dry, a yellowish white or buff-colour. Their under side is slightly downy, and, by reason of many fibrous radicles, a little rough; when moist or soak'd in water,

water, of a red colour, and urinous smell; when dry, fulcous, except the extremities, which are whitish or buff-colour'd.

The shields are rarely seen. They appear at first like very small tubercles, with a point in their centre; afterwards they encrease, and form concave shields, about 1-6th of an inch in diameter, of a tawny red colour, with granulated pale blue margins.

But what is most singular in this Lichen, is, that, besides these shields, there grow out of the leaves black green tufts or balls, of various sizes, which appear, by the help of a microscope, to be composed of numerous white pedicles, dichotomously divided at the top into a cluster of pellucid dark green gelatinous branches, covered with black farinaceous particles.

Whether these balls are a part of the plant itself, or only a parasitical production, *Dillenius* is in doubt; but *Micheli* and *Scopoli* pronounce them to be female fructifications, and their opinion seems to be nearest the truth, as these productions do constantly attend this plant, and have never yet been discovered elsewhere.

Some specimens indeed, according to *Micheli*, produce shields only; and others, balls, without shields, which might induce one to think the plant was *diœcious*.

Bnt,

But, as we have seen both on the same individual, and *Dillenius* has also figured one in that state, if *Micheli* is right, and these balls have any relation to sex, this Lichen may be considered more properly as *polygamous*.

It is strange that this singular Lichen should have escaped the observing eye of *Linnaeus*.

saccatus 64 *L. coriaceus repens subrotundus, peltis depressis subtus faccatis. Sp. pl 1616. (Micheli. gen. t. 52. ord. 31. opt. Dillen. musc. t. 30. f. 121. Oeder. Dan. 532. f. 3. mala.)*

Socket Lichen. *Anglis.*

Upon the earth in the chasms of rocks that are damp and shady, not unfrequent, especially in the Highlands.

The leaves are about an inch long, often less, slightly laciniated and obtusely lobed on the margins, of a fine glaucous green colour when recent, and generally spread upon the ground in a circular form. Their substance is thin and tender when fresh, but becomes more thick and tough when dry. The upper side is smooth, the under one whitish or tawny, abounding with fibrous radicles.

The shields are of a black chesnut colour, deeply impress'd in the leaves, or sunk as it were in sockets, which form tumors on the under side.

This circumstance alone distinguishes this species from all the rest of the genus.

The

The leaves, when dry, turn to a tawny brown colour.

croceus 65. *L. coriaceus repens subrotundus planus subtus venosus villosus croceus, peltis sparsis adnatis. Sp. pl. 1616. (Lin. Fl. lappon. 443. t. 11. f. 3. Dillenmusc. t. 30. f. 120. opt. Oed. Dan. t. 263. mala.)*

Saffron Lichen, with flat shields.

We are indebted to Mr. *Stuart* for the discovery of this rare Lichen, who found it upon a rock near the top of *Benteskerney*, in *Breadalbane*.

The leaves are about an inch long, and a thumb's breadth, dilated towards the extremity, and slightly divided into obtuse lobes. They grow three or four together, and spread flat upon the ground, sometimes in a circular form, but commonly in no regular order. The upper surface is of a whitish green, the lower one a fine saffron or orange colour, distinguished also by having downy swelling branched veins, of the same colour, running from the base towards the extremities.

The shields are of a dark fuscous colour, plain, smooth, and lie flat in the substance of the leaf, so as not to be higher than its surface. They have no rim or margin, but the skin of the leaf supplies their place by covering a little of their circumference, and this skin is often crenated on the edges.

This

This species is readily known by the fine saffron colour of the under side of the leaves.

F. ² *Umbilicati, squalentes quasi fuligine,*

miniatus 66 L. *umbilicatus gibbus punctatus subtus fulvus. Sp. pl. 1617. (Haller. hist. stirp. Helvet. Tom. 3. t. 47. f. 2. Oed. Dan. t. 532. f. 1. Dillen. t. 30. f. 127. opt.)*

Grey cloudy Lichen, tawny underneath. *Anglis.*

On rocks frequent, both in the highlands and lowlands, as in the king's park at *Edinburgh*, &c.

This Lichen varies much in appearance: Frequently it consists only of a simple leaf, of a roundish figure, from the size of a shilling to that of a crown-piece, somewhat concave on the upper side, and variously waved or lobed on the margin. The substance coriaceous; the colour on the upper side grey or cinereous, dotted all over with innumerable minute fuscous points; the under side smooth, or slightly wrinkled, without veins or fibres, of a tawny colour, having one root in the centre, by which it grows to the rocks.

Very often the leaf is divided to the centre, and the lobes lie over one another, and are elevated and waved at the margins, so that the plant seems to consist of many leaves, and bears a fancied resemblance to the clouds lying over another.

But

complicatus But the most singular variety is the following, when
 β. many small leaves grow together in thick complicated clusters, and their margins are elevated and coiled like hollow cylinders. This is that figured in *Oeder's Fl. Dan. t. 532. f. 2. bona.* and which *Dillenius* designs in his *Hist. musc. t. 30. f. 128*, and *Micheli* in his *Nova Gen. Plant. t. 54. Ord. 36. f. 1, 2.*

Complicated cloudy Lichen. *Anglis.*

This occurs frequently upon the rocks, mixed with the foregoing, and sometimes upon wet rocks in rivulets.

These have no other fructifications than the minute fuscous points or impressed tubercles before-mentioned, which are scarcely discernable without a microscope.

pustulatus. L. *umbilicatus subtus lacunosus, furfure nigro as-*
 67. *persus. Syst. nat. edit. 13. p. 809. Sp. pl. 1617.*
(Vail. paris. t. 20. f. 9. bona. Dillen. musc. t. 30. f. 131. opt. Oed. Dan. t. 597. f. 2. Micheli. gen. t. 47. ord 18. figura magna & nimis speciosa.)

Singed or blistered Lichen. *Anglis.*

Upon rocks on the highland mountains not unfrequent.

This consists of a single concave leaf, from the size of a shilling to that of a crown piece, the margin first elevated, and then turned back. The centre of the leaf is grey and blistered, as if

if it had been singed or scorched by fire; the grey colour of the blisters being derived from innumerable minute hoary grains, with which they are covered, and which give them a kind of chagreen asperity. The margin of the leaf in particular, and a considerable portion of the more interior part of it, is covered with a black footy furfuraceous substance, which, by the aid of a microscope, appears to consist of numerous branched pedicles, growing in clusters, somewhat similar to those already described on the *L. glomulifera*s, but much shorter and smaller, and of a footy colour. No other fructifications have ever yet been discovered.

The under side of the leaf is of a dusky grey or blackish colour, smooth, and without radicles, but full of pits or cavities, corresponding to the blisters on the upper side. The only root by which the plant adheres to the rocks is placed in the centre of the leaf, as is usual in the species of this division.

When the plants grow old, they sometimes extend themselves to the breadth of four or five inches, and are divided into deep unequal segments, as *Micheli* has figured it in the plate above quoted, and *Dillenius* in his *Hist. musc. t. 30. f. 131. A.*

When the plant is wet it turns to a dull fuscous green colour.

L. um-

crinitus 68. L. umbilicatus margine crinitus, peltis nigris concinnatis subpedunculatis. (*Dillen. musc. t. 29. f. 116. A. B. opt. Oed. dan. t. 471. f. 1, 2.*) an L. *proboscideus*? Lin.

Frizzled Hair-button Lichen.

Upon the rocks on the highland mountains not uncommon, as on *Goatfield* in the isle of *Arran*, on the mountains of *Breadalbane*, *Ben-Nevis* in *Lochaber*, &c.

This generally consists of a single leaf, about an inch in diameter, deeply laciniated; or of several leaves, united together by an umbilical cord in the centre, on the under side. Their substance is stiff, and like parchment, and their edges fringed or ciliated, more or less, with simple and branched rigid hairs, of a blackish colour. Their upper side is of a black grey colour, a little concave, the margins being elevated. The under side is smooth, buff-colour'd about the centre, but of a black or smoky grey colour about the margins.

The *peltæ*, or shields, are black, supported on very short peduncles, and curiously form'd. They are about the size of a pin's head, their surface sometimes plain, and sometimes convex, appearing as if composed of a horse-hair, laid sometimes in concentric circles, and other times in curled spirals, so as to resemble, according to *Dillenius*, a horse-hair button.

We

We have received this Lichen from several of our friends under the name of *L. proboscideus*, of *Linnaeus*, with which it by no means agrees, either according to the figure of *Dillenius*, quoted by *Linnaeus*, or *Dillenius's* specimens corresponding to that figure, which we carefully examined at *Oxford*.

If therefore the plant now described be the same which *Linnaeus* intended for his *L. proboscideus*, he has quoted a figure that has no resemblance to it, and neglected others of the same author, which are very good, and exactly tally with it.

In the midst of these uncertainties we judged it the best method to give a new name and description to a doubtful plant, and to apply such figures as are just and good, and which we are sure belong to it; which will be the means of establishing certainty for the future.

deustus 69. *L. umbilicatus* undique lævis. *Sp. pl.* 1618. (*Vail. pares. t.* 21. *f.* 14? *Dillen. t.* 30. *f.* 117.)

Black-grey Lichen, with little black warts. *Anglis.*

Upon the highland rocks with the preceding.

It consists of a single umbilicated concave leaf, of a blackish or smoky grey colour, a little wrinkled or shrivelled on the upper side, but quite smooth and without radicles on the under side, and the colour a little paler towards the centre.

The fructifications are very minute, black tubercles,

cles, formed of about two hair-like concentric circles.

Such are our specimens, and such are those of *Dillenius* which we compar'd with ours.

It differs from the preceding in the smallness of the tubercles, and in having no rigid hairs on the margin, otherwise in colour and substance it is very like it, and we suspect it to be only a variety, as the margins of the leaves in that do often produce but very few hairs, and therefore may perhaps be found sometimes bald, or entirely without hairs.

It may be also readily distinguished from the *L. miniatus* before-mentioned, not only by its black-grey colour, but also in having small elevated black hair-button tubercles; whereas the other has only innumerable fine impress'd dots or points.

torrefactus L. umbilicatus pullus, supra rugosus, subtus reticulato-fibrosus, verrucis nigris crispis. (*Diilen. muse. t. 30. f. 118. bona. & ejus varietas f. 119. Oed. Dan t. 471. f. 3? sed abique fibris reticulatis.*)

Sad-colour'd crumpled Lichen, with black curled warts.

Upon the highland rocks frequent.

This consists of one, and often several leaves, of a black brown or sad colour, united at the base

base by an umbilical cord. The upper side is crumpled, and the margin lobed and uneven. The under side is fibrous, and of a paler colour, especially towards the centre, where the fibres are most numerous, and are thin, compress'd, and reticulated. The space between the fibres is finely granulated, which gives it a slight asperity, like chagrin.

The fructifications are numerous, wrinkled, black sessile tubercles, which seem to be composed of curled hairs, very like those of the *L. crinitus* before-mentioned, but not so regular nor so shining.

Whether *Linnaeus* intended to comprehend this under his *L. polyrbizos*, or has totally neglected it, is uncertain; but we are sure that it relates to those figures of *Dillenius* above cited, from having had a view of that author's specimens.

polyphyllus *L. umbilicatus polyphyllus* undique lævis atrovi-
71. rens crenatus. *Syst. nat. edit. 13. p. 809. Sp. pl.*
1618. (*Dillen. musc. t. 30. f. 129.*)

Little smooth dusky rock Lichen. *Anglis.*

Upon the rocks on the highland mountains frequent.

This consists of many small leaves, united at the base by one common root, lying over one another, obtusely and unequally sinuated on the margins,

margins, and spreading in a circle or cluster of about the size of a sixpence. They are of a black brown or dusky sad colour, very thin and brittle, and quite smooth on both sides.

No fructifications of any kind have as yet been observed upon them.

The leaves when moist are of a black green colour.

polyrbizus L. umbilicatus polyphyllus supernè glabrum, inferne nigrum & cirrosum. L. *polyrbizos*. Lin. Sp. pl. 1618. *differentia specifica emendata*. (Haller. *hist. helvet. n. 2000. t. 47. f. 4. Dillen. musc. t. 30. f. 130. bona.*)

Dusky rock Lichen, black and fibrous underneath. *Anglis.*

Upon the rocks on the highland mountains not unfrequent. The same also was communicated to me by Dr. *Burgess*, found upon the rocks in the lowlands.

This consists sometimes of one sinuated leaf only, but more commonly of several, united together by an umbilical cord at the base, and spreading to the breadth of a shilling or half a crown. The upper side is smooth, of a dusky brown or sad colour when old and dry, but when fresh of a whitish or cinereous brown. The under side is quite black, rough and fibrous.

But

But what particularly distinguishes this Lichen is, that the margins of the leaves are edged with a black fringe, which gives them a crisped appearance. This fringe, when viewed through a microscope, appears to consist of a crowd of little pedicles, terminated each with a head or cluster of branches, like trees in miniature; and not only upon the margin of the leaves, but frequently also upon their disc, this fringe grows in little clumps or balls, appearing to the naked eye like small black warts.

Besides this fringe, which may be considered as the female fructifications of the plant, there are also male warts found upon the disc of the same individual. These are black and wrinkled, at first flat, and a little sunk or impress'd in the leaf, but afterwards more convex and elevated. They appear through the microscope to be of the same structure with the hair-button kind before mentioned, but composed of finer hairs, differently twisted, and more closely compacted.

Such is the description of our specimens, which are precisely the same with those of *Dillenius* at *Oxford*, from which the figure was made which *Linnaeus* has cited for his *L. polyrhizus*. But why that author, in giving the *specific difference* of that plant, should say of it, that it is *utrinque lævis*, when the under side is so remarkably rough with fibrous radicles, is more than we are able to resolve. As we wish to follow nature,

K k k

rather

rather than be guided by any author, we have, therefore, taken the liberty to alter, and, we hope, to amend, *Linnaeus's* specific characters of this Lichen.

Obs. The *L. velleus* of *Linnaeus*, according to *Dillenius's* specimen, is totally different from the Lichen above described, and is such as we believe was never yet found in *Great-Britain*. We mention this not only because *Mr. Hudson* has recorded the *L. velleus* as an *English* plant, but because we have received specimens of that just now described from our friends, under the name of the *L. velleus*, of *Linnaeus*.

Dillenius's specimen of the *L. velleus* is broader than the palm of a man's hand, very nearly as thick as a bullock's hide, destitute of marginal fringe and male warts.

G. * *Scyphiferi.*

cocciferus

73.

L. scyphifer simplex integerrimus, stipite cylindrico, tuberculis coccineis. Sp. pl. 1618. (Michel. gen. t. 41. ord. 8. f. 3, 4. Vail. paris. t. 21. f. 4. Dillen. musc. t. 14. f. 7. A-M.)

Scarlet-tipp'd Cup Lichen. *Anglis.*

In moors and heaths frequent.

This Lichen has, in the first state, a granulated crust for its ground, which afterwards becomes small laciniated leaves, green above, hoary underneath.

The

The plant assumes a very different aspect, according to the age, situation, and other accidents of its growth; but may be, in general, readily distinguished by its fructifications, which are fungous tubercles, of a fine scarlet colour, placed on the rim of the cup, or the top of the stalk. These tubercles in decay turn to a dark fuscous colour.

The stalks are tubular, generally white, sometimes greenish, or sometimes fuscous, usually covered with green farinaceous warts, or minute scaly leaves.

At first they appear cylindrical, without a cup at the summit, but tipp'd with small red tubercles. *Dillen. t. 14. f. 7. A. B.*

Afterwards they dilate at the top, and form a cup with minute fertile tubercles on the rim. *Dillen. t. 14. f. 7. E. F.*

These tubercles in a little time encrease in size, and become elevated on short thick footstalks. *Dillen. t. 14. f. 7. H. I.*

Thus far the plant seems to be in its natural state; but it frequently assumes a monstrous appearance, and becomes proliferous; producing one while new cups out of the rim of the second, and so on even to four stages, each cup producing large scarlet tubercles. *Dillen. t. 14. f. 7. K. L.*

Or at other times producing new stalks and cups out of the *middle* of the lower cup instead of

K k k 2

the

the *rim*; all the different cups at the same time having small sessile tubercles on their margins. *Dillen. t. 14. f. 7. M.*

There are still other varieties of less note, but such as are readily discern'd by the scarlet fructifications.

The tubercles, steep'd in an alkaline *Lixivium*, are said to dye a fine durable red colour.

*cornucopi-
oides 74.*

L. scyphifer simplex folio brevior, tuberculis coccineis. Sp pl. 1619. (Dillen. musc. t. 14. f. 9)

Radiated Lichen. *Anglis.*

On moors and heaths, mixed now and then with the foregoing.

It has a green foliaceous crust for its ground, being very like most of this division, out of which arise short ash-colour'd cup-bearing stalks, shaped like a hollow inverted cone. The margins of these cups are radiated both with small leaves, like those of the ground, and also with little scarlet tubercles, supported on very short footstalks, which tubercles turn fuscous, and sometimes black in decay.

This Lichen is frequently proliferous, producing other cups both from its margin and centre.

It is in all probability no other than a variety of the preceding, though *Linnaeus* has distinguished it as a species.

L. scy-

pyxidatus
75.

L. scyphifer simplex crenulatus, tuberculis fuscis.
Sp. pl. 1619. (*Vail. Paris t.* 21. *f.* 8. *Michel.*
gen. t. 41. *f.* 1. *Dillen. musc. t.* 14. *f.* 6. *A-M.*)

Common Cup-Moss, or Lichen. *Anglis.*

In heaths, and on banks and rocks, and about the roots of old trees.

The ground of this is at first a granulated crust only, which grows afterwards to small leaves, irregularly laciniated, green on the upper side, white underneath; at the base of which leaves arise grey ash-colour'd funnel-shap'd cups, from half an inch to an inch high, sometimes cover'd with a farinaceous powder, and sometimes not, slender at the base, but widely expanded at the rim. The stalk of the cup, or funnel, is tubular, but not throughout, for the cup itself is concave and closed at the base. The rim, if attentively examined, is finely crenated.

This is the most common and simple appearance of this Lichen, but it varies greatly.

Sometimes the margins are surrounded with brown sessile tubercles, which in decay turn to a blackish colour. And sometimes these tubercles are supported on short peduncles, and begin to assume the appearance of secondary cups. It is figur'd in both these states by *Dillenius, t.* 14. *f.* 6. *C.*

It is also frequently proliferous, and that in two different ways. Sometimes secondary cups grow out of the margins of the first, and others again
out

out of the margins of the second, and so on for three or four stages one above another, the cups one while producing tubercles on their margins, another while none, and the stalks sometimes foliaceous, and sometimes not so. In all these states it is figured by *Dillenius*, t. 14. f. 6. I. K. L. M. *Michel*. t. 41. ord. 8. f. 7. 8.

The other manner in which it becomes proliferous, is, when secondary cups arise out of the centre of the first, others out of the centre of the second, and so on sometimes even to five stages; the rim of the cups, in the mean time, being either destitute of tubercles, or surrounded with small sessile fuscous or blackish ones. See *Dillenius*, t. 14. f. 6. D. E. F. G. H. *Vail. paris.* t. 21. f. 5.

A decoction of this moss is sometimes given by the vulgar to children to cure the *whooping cough*, but the good effects of it are not supported by proper testimonies.

fimbriatus
76.

L. scyphifer simplex denticulatus, stipite cylindrico. *Sp. vl.* 1619. (*Vail. paris.* t. 21. f. 6. & *varietas prolifera*, f. 9. *Dillen. musc.* t. 14. f. 8. A. B. C.)

Serrated Cup Lichen. *Anglis.*

In moors and heaths with the foregoing.

This, in all probability, is only a variety of the last. The stalks are whiter than that, and generally

nerally more slender; but the principal difference lies in this, that the rim of the cup is finely ferrated.

The tubercles are small and fuscous, and stand upon the tips of the white ferratures of the rim, but are rarely seen.

This, like the preceding, is found sometimes prolific from the margin. See *Dillen. t. 14. f. 8. C. Vail. par. t. 21, f. 9.*

tubiformis
77.

L. *scyphifer simplex integerrimus tubiformis, tuberculis coccineis. L. filiformis. Hudf. Fl. Ang. p. 456. (Dillen. musc. t. 14. f. 10. A. B.)*

Little Trumpet Lichen. *Anglis.*

In woods and heaths, and at the roots of old trees.

The leaves which form the ground of this are pinatifid, and somewhat larger than in the preceding species, of a fine green above, and white beneath. The cups are small, and have very slender stalks, and entire rims. They are about half an inch high, and resemble a little trumpet, of a grey or ash-colour in the winter, but turning brown in the spring.

The tubercles are very small and scarlet, but are rarely seen. They stand upon little short footstalks, which are no other than segments of the cup, for the cup vanishes when the tubercles are form'd. The tubercles turn fuscous or blackish in decay.

THIS,

This, like the other species, has sometimes proliferous margins.

We believe this to be a young variety of the *L. cocciferus*, and are pretty certain that it sometimes changes into the *L. cornucopioides*.

alcicornis
78.

L. foliis suberectis laciniatis cartilagineis scyphiferis, scyphis primùm brevissimis conicis simplicibus, deinde proliferis tuberculis nigris. L. foliaceus. Hudf. Fl. Ang. p. 457. (Dillen. t. 14. f. 12. A. B. C. D.)

Elk's Horn Lichen. *Anglis.*

Upon heaths and mountains.

The leaves are large for the size of the cups, and nearly erect, smooth on both sides, of a tough cartilaginous substance, plain, but the edges a little inflected, either grey or yellowish green on the upper side, but white underneath, and variously divided so as to resemble in good measure an elk's horns.

The little tubular cups arise out of the middle and margins of the leaves, very short and invertedly conical, at first with simple or slightly crenated rims. This is the winter appearance of this Lichen.

In the summer it puts on a different aspect. The margins of the leaves vanish, and the firmer central parts only, or skeleton of them, remains of a tough gluey substance, with here and there
a few

a few straggling segments annexed. In this state the stalks of the cups become very slender, their rims are edged with small dark brown or blackish tubercles, supported on little footstalks, and sometimes they are proliferous.

At this time the plant assumes the appearance of one of the branched shrubby Lichens, of the next division, and shews how nearly they are related.

gracilis 79. L. scyphifer ramosus denticulatus filiformis. *Sp. pl.* 1619. (*Moris. hist. p.* 632. *f.* 15. *t.* 7. *f.* 6. *Dillen. musc. t.* 14. *f.* 13. A-E.

Tall slender Lichen. *Anglis.*

Upon heaths and mountains frequent.

The stalks of this are very slender and smooth, varying from one to three inches in height, sometimes single, and sometimes branched; of a grey colour at the base, but brownish towards the top, tubular, and generally growing in clusters. Some of these stalks are subulate at the top, being young, and having as yet formed no cups. Others are terminated with cups of various sizes, dented on the margin, and tipp'd with dark fuscous or blackish tubercles; which tubercles are sometimes sessile, and sometimes supported on short peduncles. Very frequently the margins are proliferous, shooting out several narrow subulate horns, some of which form again small dented cups on their summits.

It

It may in general be readily enough distinguished by its tall, smooth, slender stalks, of a brownish colour, some of them tubulate, others terminating in small cups, and others with cups which shoot out from their margins long tubulate horns.

The stalks are often a little branched, but a variety sometimes occurs having dichotomous stalks greatly branched, and small deeply ferrated, or, more properly, finely radiated cups. See *Dillen. t. 14. f. 13. E.*

digitatus 80 L. *scyphifer ramosissimus, ramis cylindricis, calycibus integris nodosis. Sp. pl. 1620. (Dillen. musc. t. 15. f. 19. A. B. C.)*

Branched Lichen, with scarlet heads. *Anglis.*

In woods at the roots of old trees, and in barren heaths.

The stalks are about an inch high, tubular, of a hoary grey colour, covered with minute crustaceous leaves towards the base, and a farinaceous powder towards the top, sometimes simple, and sometimes divided into a few branches. Each of these branches forms an obscure cup near its summit, from which, as a centre, arise several secondary branches, or horns, tipp'd with scarlet tubercles.

It is probably no other than a variety of the L. *coccineus.*

L. *scy-*

ventricosus
81.

L. scyphifer ventricosus ramosissimus, scyphis dentatis tuberculis fuscis. Hudf. Fl. ang. p. 457. (Dillen. musc. t. 15. f. 17. A-C.)

Branched Cornucopia Lichen. *Anglis.*

In woods upon the decay'd stumps of old trees, but not common.

It is about two inches high, hoary and farinaceous, and resembles, in miniature, a pollard tree with its lop on; the stalk swelling at the top, and forming an obscure cup, which shoots out several branches, bearing other cups, which are repeatedly branched and proliferous, the extreme ones very small, and tipp'd with minute fuscous tubercles, supported on short footstalks.

It is a curious and singular variety of one of the preceding, perhaps of the last.

cornutus 82.

L. scyphifer simpliciusculus subventricosus, calycibus integris. Sp. pl. 1620. (Barrel. ic. t. 1277. f. 1. bona. Dillen. musc. t. 15. f. 14. A-F.)

Horned or Skewer Lichen. *Anglis.*

On moors and heaths very common.

This, like the rest, has a foliaceous crust for its base, out of which arise numerous and very various tubular stalks.

In their first state they are very frequently simple and subulate, sometimes erect, and sometimes incurv'd like an ox's horn, one while smooth, another while farinaceous or foliaceous, of a whitish

whitish grey, a glaucous, and sometimes a green colour.

After this they assume a cylindrical figure, and sometimes are largest at the top, and terminated with a small obscure cup, with a scarlet rim, or beset with small pedunculated scarlet tubercles. In all these states it is figured by *Dillenius t. 15. f. 14. A.*

Besides these there are yet several other varieties.

- β. Sometimes the stalks are simple, thick, and inflated in the middle, and subulate at top, as at *tab. 15. f. 14. B.*
- γ. At other times both simple and branched, very foliaceous and incurv'd, as at *fig. 14. C.*
- δ. One while forked at the top; another branched near the base, as at *D. E.*
- ε. And, last of all, cylindrical, erect, and remarkably crisped on the outside, as at letter *F.*

It is very probable that all these are only varieties of *L. cocciferus*.

deformis 83 *L. scyphifer simpliciusculus subventricosus, calycibus dentatis. Sp. pl. 1620. (Flor. Lapp. t. 11. f. 5. bona.)*

Clumsey Lichen, with subulate stalks and dented cups. *Anglis.*

About the roots of old trees in woods, and in heaths, but not common.

This

This produces two kinds of stalks, about an inch and a half or two inches high, both covered with a grey farinaceous powder. The first is simple and subulate, erect or curv'd, of various sizes, the largest as big as a goose-quill.

The other is smallest at the base, and encreases gradually to the top, which ends in a dented cup, the dents tipp'd with very minute reddish brown tubercles.

Sometimes the subulate stalks are a little branched and both beset with crustaceous leaves.

It seems to be only a variety of the foregoing; and therefore, tho' in compliance with authors we have described many Lichens in this division, we are inclined to think there are not above three or four at most that have distinct specific limits.

H. * *Fruticulosi.*

rangiferi-
nus 84.

L. fruticulosus perforatus ramosissimus, ramulis nutantibus. Sp. pl. 1620. (Michel. gen. t. 40. ord. 6. f. 1. Moris. hist. 3. p. 633. f. 15. t. 7. f. 9. Dillen. musc. t. 16. f. 29. A-F. opt. Oed. Dan. t. 180. & t. 539.)

Rhendeer Lichen. *Anglis.*

In woods, heaths, and mountainous places, frequent.

alpestris.

Its general height, when full grown, is about two inches. The stalk is hollow, and very much branched

branched from bottom to top, the branches divided and subdivided, and at last terminated with two, three, four, or five very fine short nodding horns. The *axillæ* of the branches are often perforated. The whole plant is of a hoary white or grey colour, covered with white farinaceous particles, light and brittle when dry, soft and elastic when moist.

The fructifications are very minute, round, fuscous, or reddish brown tubercles, which grow on the very extremities of the finest branches; but these tubercles are seldom found.

The plant seems to have no foliaceous ground for the base, nor scarcely any visible roots.

This is the celebrated moss ordain'd by Providence to be the chief support of the rhendeer*, and the rhendeer, of a great part of the inhabitants of the polar regions. The *Laplander* in particular could ill subsist without the supplies of this useful creature: it is to him his whole wealth; it yields him almost every necessary of life; it serves him instead of horses, cows, and sheep; the rhendeer affords him milk, butter and cheese, draws him in sledges with great speed from place to place over the ice and snow, gives his flesh for food, his skin for cloathing, his tendons for bow-strings, and (when slit) for thread, his horns for glue, and his bones for spoons. And the almost only winter food of this

* Synopsis of Quadrupeds, No. 36.

this serviceable animal is the moss we have just described, which the deer are so fond of, that tho' it is commonly buried at that season a great depth beneath the snow, yet, by scratching with their feet, and digging with their brow-antlers, they never fail to get at it. In short, without it both the rhendeer would perish and the *Laplander* too. Thus things which are often deem'd the most insignificant and contemptible by ignorant men, are, by the good Providence of GOD, made the means of the greatest blessings to his creatures.

Linnaeus informs us that this Lichen grows so luxuriant in *Lapland* as to be sometimes found a foot high.

There are many varieties of it, differing greatly in size, or in being more or less branched; but that which chiefly deserves our notice is the

L. sylvaticus. Lin. which, tho' only a variety of the preceding, yet bears a different face. The summits of the branches in this are generally erect, and always of a reddish brown or fuscous colour. The stalks are smaller, and sometimes, but not always, beset with minute crisped leaves, which are never seen in the other. The tubercles, at the summits of the branches are larger, more clustered, and of a darker brown colour, turning black when old or dry. The whole plant also turns fuscous by age, while the other
always

always continues white. See the figures of it;
Dillen. musc. t. 16. f. 30. A. B. C. D.

Brown tipt Rhendeer Lichen, *Anglis.*

It grows in the same places as the other frequent.

uncialis 85 *L. fruticulosus perforatus, ramulis brevissimis acutis. Sp. pl. 1621. (Dillen. t. 16. f. 22. A-G.)*

Short white Trident Lichen, *Anglis.*

On moors and heaths frequent.

This has a slight foliaceous crust for its base, like the *L. pyxidatus*. The stalks are of a yellowish white colour, about an inch high, hollow, perforated at the *axillæ* and summits, slightly branched, and terminated generally with three, but sometimes more, innocent spines or forks. These forks, when the plant is in fructification, are tipt with very minute chocolate-colour'd dots or tubercles.

¶ There is a variety of this, which frequently occurs in similar places, often three or four inches high, of the same colour, smooth, soft, and dichotomously branched, perforated at the summits and angles like the foregoing, and terminating in three, four, or five forks, disposed in a radiated form; the forks sometime tipped with small reddish tubercles. It differs chiefly in size, and in being more branched, and not growing so much in clusters. See the figures of
of

of it in *Moris. hist. III. p. 633. f. 15. t. 7. f. 7.*

Dillen. musc. t. 16. f. 21. A. B.

Great white Trident Lichen. *Anglis.*

When dry these plants become quite brittle.

subulatus

86.

L. fruticulofus subdichotomus, ramis simplicibus subulatis. Sp. pl. 1621. (Dillen. musc. t. 16. f. 26. A. B. C.)

Branched horned Lichen. *Anglis.*

In woods and heaths frequent.

It has a foliaceous crust for its base, composed of small crenated ash-colour'd leaves, hoary underneath. The stalks are from one to two inches high, slender, tubular, ash-colour'd, or greenish ash-colour'd when fresh, whitish when dry, either smooth, or beset with small leaves, like those at the base, branched a little towards the top, and terminating in one, or, more commonly, two, subulate horns, either erect, or variously inflexed; sometimes, though rarely, tipped with small round fuscous or reddish brown tubercles.

furcatus

87

L. fruticulofus tubulosus ramosus, ramis ascendentibus dichotomis bifurcatis. Hudf. Fl. Ang. p. 458. Haller. hist. n. 1954. (Moris. hist. III. p. 632. f. 15. t. 7. f. 1. bona. Michel. gen. t. 40. f. 4. & D. Vail. Paris. t. 26. f. 7. Dillen. musc. t. 16. f. 27. A-D. opt.)

Forked Lichen. *Anglis.*

In heaths and mountainous places frequent.

We doubt whether this be a distinct species from the former. It differs however from it in the following respects: The stalks grow more in clusters, are more repeatedly branched, and terminated in shorter forks or horns, and are generally more foliaceous. Their colour is commonly white, spotted with green, but are frequently ash-colour'd, and often fuscous, especially the young plants, and the forks of the old ones. The tubercles are rarely found. They grow on the points of the forks, and are small, round, and reddish.

- β. It varies sometimes with leaves remarkably crisped and foliaceous, as figured by *Dillenius*, *Hist. musc. t. 16. f. 27. D.*

spinosus 88 L. fruticulosus tubulosus, vagè ramosus, spinosus, ramulis tuberculatis subdigitatis. *Huds. Fl. Ang. p. 459. Haller. bist. n. 1952. (Michel. gen. t. 40. f. 5. Dillen. musc. t. 16. f. 25.)*

Prickly distorted Lichen. *Anglis.*

Upon heaths and mountainous places, but not very common, as upon the *Pentland* hills, &c.

So far as we can judge from our own specimens, and those of *Dillenius* at *Oxford*, we are inclin'd to think that this is no other than a variety of the preceding. The young plants in both are exactly similar, and agree precisely with the figure of *Dillenius*, *Hist. musc. t. 16. f. 27. A.*

They

They are tubular, grey, or ash-colour'd at the base with a tinge of brown, but fuscous at the top.

The old plants are either of a grey brown colour, or totally brown, rigid and branched, the branches irregular, greatly distorted, and beset here and there with innocent spines, some erect and some recurved. The branches, when young, generally end in two or three short forks, when old frequently in single spines.

The tubercles are of a chocolate colour, and grow on the summits of the branches. Sometimes these summits open, dilate, and become palmated, each segment of the division terminated with a tubercle.

It varies from one to three inches in height, and, so far as we have observed, is destitute of leaves.

hispidus 89 L. fruticulosus solidus ramosissimus, ramis divaricatis subcompressis glabris spinulosis, angulis obtusis. (*Dillen. musc. t. 17. f. 31. A. B.*) an varietas L. islandici? *Lin.*

Little brown prickly Lichen. *Anglis.*

Upon the Highland mountains not uncommon, as on *Creg-chaillech*, in *Breadalbane*, &c. Mr. *Tal-*
den gathered it in the Lowlands, upon a hill called *Scrape*, near *New-Posso*.

It is about an inch high, and grows in thick, entangled tufts, or clusters, of a dark brown and sometimes

sometimes a blackish colour. The stalks at first are very small and round, afterwards broader and compress'd, not hollow within, but full of a white spongy pith. They are divided and subdivided into many fine branches, which are widely spread, the angles of the divarications being obtuse and roundish. The extremities of the branches terminate in small short acute spines or forks. The substance of the stalks is rigid and tough, somewhat brittle when dry, their surface smooth and glossy, but in the larger and older specimens beset around with numerous very minute innocent spinules, especially about the summits of the branches, which appear on that account rough and hispid. The young plants are generally destitute of these spinules, and terminate only with short acute horns or forks.

The fructifications are very rarely found. They grow upon the extremities of the branches, in the shape of broad flat smooth shields, of the same colour as the leaves, their edges unequally deflex'd, and surrounded with spinules.

The plants vary from half an inch to an inch and a half in height; and the smallest specimens are the most crowded or matted together.

Some authors have supposed this Lichen to be only the young plants of the *L. Islandicus* above-mentioned. See No. 41.

We

We pretend not to dispute this matter with any person disposed to think so. But as the stalks and branches of this Lichen, so far as we have hitherto noticed, do *generally*, if not *always*, preserve their shrubby appearance, being either cylindrical or compressed; not composed of a single membrane like the *L. islandicus*; and as we have seen it in this state in full fructification, we cannot but think ourselves justified, if for no other reason, yet for the ease of the student only, in giving it a place among the *L. fruticulosi*.

corniculatus 90.

L. fruticulosus solidus ramosus, ramis declinatis compressis dichotomis, scutellis plano-convexis fungiformibus. (Dillen. musc. t. 17. f. 37. bona. Haller. hist. n. 1966. t. 47. f. 1. sine fruct.)

Black horned Wrack Lichen. *Anglis.*

Upon the rocks in the Highland mountains in many places, as on *Creg-chailleck*, in *Breadalbane*, on *Ben-Lomond*, on the mountains in *Ross-shire*, and the isle of *Skye*, &c.

The stalks are from half an inch to an inch long, and grow reclined in a small thick tuft. They are solid, smooth, compressed, dichotomously branched, and terminate in subulated horns or forks, of a dusky olive colour when moist, almost black when dry, their substance rigid, tough and horny.

The

The fructifications grow on the summits of the stalks and branches, like plano-convex shields, of a black-brown colour, their margins sometimes entire, and sometimes beset with a few spines. These shields are at first slightly concave, afterwards plain, and, lastly, convex.

The extremities of the branches in the same plant, if viewed through a microscope, often appear a little rough and tuberculous.

This Lichen is, without doubt, a distinct species, though unnoticed by *Linnaeus*.

pascualis 91 L. fruticulosus solidus, tectus foliolis crustaceis. *Sp. pl.* 1621. (*Moris. hist. III. p.* 633. *f.* 15. *t.* 7. *f.* 12. *Pet. mus. t.* 65. *f.* 7. *Loes. Pruss. 168. t.* 48. *Dillen. musc. t.* 17. *f.* 33. *opt. Oed. Dan. t.* 151. *bona.*)

Crisped warty alpine Lichen. *Anglis.*

Upon the rocks on all the Highland mountains frequent.

The stalks are woody, cylindrical, and variously branched, from one to two inches high, cover'd over with clusters of whitish or blue-grey crustaceous warts, or rather small granulated leaves.

The tubercles grow on the summits of the branches, and on the warty leaves, and appear like small brown smooth fleshy *fungi*, either single or in clusters, and which turn black in decay.

Linnaeus

Linnaeus informs us that the rhendeer will feed upon this as well as the *L. rangiferinus*.

globiferus 92. *L. fruticulosus solidus lævis, tuberculis globosis cavis terminalibus. Lin. syst. nat. edit 13. p. 809. Mantiss. p. 133. Hudsf. angl. p. 460. L. globosus. (Michel. gen. t. 39. f. 6. Dillen. musc. i. 17. f. 35. opt.)*

Round-headed Coralline Lichen. *Anglis.*

Upon rocks both in the Highlands and Lowlands frequent.

The stalks grow in clusters, and are about an inch and a half or two inches high, cylindrical, solid, smooth and glossy, of a tough horny substance, rigid and brittle when dry, of a grey, glaucous colour when young, but of a sandy or somewhat tawny colour when old or dry, divided into many branches, the divisions at their extremities very fine and numerous.

The fructifications grow on the summits of the stalks, and of the same colour as the stalks, of a spherical form, covered with a hard thick rind or coat, which cracks, when ripe, into three or four parts, and discovers a black *nucleus* within, which appears, thro' the microscope, to consist of globular grains of powder.

It is a most elegant species, and may be disposed in grotto work, so as to produce a good effect,

as

as it resembles greatly some of the tribe of Corallines.

fragilis 93. L. fruticulosus solidus, ramulis teretibus obtusis fastigiatis. *Sp. pl.* 1621. (*Fl. lappon. t. 11. f. 4. Dillen. musc. t. 17. f. 34. A. B. C. opt.*)

Brittle alpine Coralline Lichen. *Anglis.*

Upon rocks in mountainous places both in the Highlands and Lowlands frequent.

We suspect this not to be specifically different from the preceding.

The stalks grow in close thick clusters, an inch or an inch and a half high, of a grey glaucous colour, dichotomously branched, the summits of the branches bifid, sometimes trifid, all of equal height, and obtuse at the ends. Previous to their fructification the stalks grow thicker, wider, compress'd, pitted, and more naked of branches.

The fructifications are similar to those of the foregoing. The figure of *Dillenius* represents them in their decay'd state, half worn away, or as if cut transversely asunder, with a fine black powder in their centre.

It differs chiefly from the preceding in its more regular and dichotomous ramification, and the summits of the branches being of equal height, not so minutely divided, and rather obtuse. In the fructification, and other respects, there is no material variation.

Upon

Upon the rocks near the *Tarbet* of *Cantire* we observ'd specimens tinged with a bright red colour, so as to resemble very strongly the *Coralina rubens*. *Lin. Syst. nat. p. 1304.*

J. * *Filamentosi.*

plicatus 94 L. filamentosus pendulus, ramis implexis, scutellis radiatis. *Sp. pl. 1622, (Dillen. musc. t. 11. f. 1. opt)*

The officinal stringy Lichen. *Anglis.*

Upon the branches of old trees, but not common. In *Barntimpen-Linn*, in the parish of *Kirkpatrick*, about five miles south of *Moffat*, in *Dumfriesshire*. *Dr. Burges.*

The stalks are a foot or more in length, cylindrical, rigid, and string-shap'd, very irregularly branched, the branches entangled together, of a cinereous or ash-colour, brittle and stringy if doubled short, otherwise tough and pliant, and hang pendent from the trees on which they grow. The branches throughout their whole length, but in some parts more crowded than others, shoot out, at right angles, thick, stiff fibres, some single, some branched, of a grey or ash-colour, the finest and most crowded commonly near the summits.

The shields grow generally at the extremities of the branches, are nearly flat, or slightly concave,

cave, thin, ash-colour'd above, pale brown underneath, and radiated with fine rigid fibres.

As the plant grows old the branches become covered with a white, rough, warty crust; but the young ones are destitute of it.

It was formerly used in the shops as an astringent to stop hæmorrhages, and cure ruptures, but is out of the modern practice.

Linnaeus informs us, that the *Laplanders* apply it to their feet to relieve the excoriations occasion'd by much walking,

barbatus 95 *L. filamentosus pendulus subarticulatus, ramis patentibus. Sp. pl. 1622. (Dillen. musc. t. 12. f. 6.)*

Bearded Lichen. *Anglis.*

Upon the branches of old trees in thick woods and pine-forests.

The stalks, or strings, are slightly branched, and pendulous, from half a foot to two feet in length, smaller than those of the preceding, being littler bigger than a taylor's common sewing-thread, cylindrically jointed towards the base, but surrounded every where else with numerous horizontal capillary fibres, either simple or slightly branched. Their colour a whitish green.

The shields are rarely found. According to *Dillenius* they are very small, flesh-colour'd, and sessile, and adhere to the sides of the branches.

From

From what we observed of his specimens at Oxford, we are disposed to think that this and the *L. articulatus*. Lin. are only varieties of one another.

Its quality is astringent, like the preceding. When steep'd for some time in water it acquires an orange colour, and, according to Dillenius, is used in *Pensylvania* to dye with that colour.

pubatus 96. *L. filamentosus pendulus, axillis compressis. Sp. pl.*
1622. (*Dillen. musc. t. 12. f. 7.*)

Blackish Mane Lichen. *Anglis.*

Upon rocks not unfrequent, and sometimes upon the branches of old trees.

The stalks, or rather filaments, of which this is composed, vary from three inches to a foot in length, are very slender, smooth, cylindrical, branched, pendulous when long enough, generally of a mixed colour, cinereous at the base, but elsewhere of a dark fuscous green, verging to black. The largest of them are a little compress'd, especially at the angles of ramification, greatly entangled with one another, and terminated with fine cylindrical capillary fibres, sometimes erect, sometimes curled, and contorted. Their substance firm and elastic.

The only fructifications yet seen are very small, plain, farinaceous warts, sprinkled here and there on the sides of the filaments, of a yellowish

lowish green colour when moist, but white when dry.

Linnaeus relates, that, in defect of the *L. rangiferinus*, the *Laplanders* frequently cut down trees laden with this moss to supply the rhendeer with fodder.

chalybeifer- *L. filamentosus ramosus divaricatus decumbens*
mis 97. *implicato-flexuosus. Syst. nat. edit. 13. p. 810.*
Sp. pl. 1623. (Oed. dan. t. 262. Dillen. musc. t.
13. f. 10. opt.)

Wiry straggling Lichen. *Anglis.*

Upon the trunks of old trees, and upon rocks frequent.

We are perfectly well convinced, from a view of *Dillenius's* original specimens, that this is no other than a variety of the *L. jubatus*.

Its colour and fructifications are the same. Its length is about two or three inches; and it differs only in having filaments a little more straggling, and not pendulous, but decumbent, which is owing to its shortness.

lanatus 98. L. filamentosus ramosissimus decumbens implica-
tus opacus. Sp. pl. 1623. (Dillen. musc. t. 13. f.
8.)

Black hard Wool Lichen. *Anglis.*

Upon

Upon rocks both in the Highlands and Lowlands not uncommon.

It resembles a lock of coarse wool from a black sheep, partly fuscous, but mostly black, and without gloss. The filaments are about an inch, seldom two inches long, crowded together, and entangled one with another, much branched, and cylindrical throughout, the branches divided into short capillary segments. But what principally distinguishes this from the preceding, is not only the tenuity, shortness, and frequency of the branches, but that many short fine capillary fibres, like spinules, grow horizontally out of the sides of the filaments.

The plant, when dry, is rigid; when moist, softer and flaccid.

pubescens
99.

L. filamentosus ramosissimus decumbens implexus nitidus. Sp. pl. 1623. (Dillen. musc. t. 17. f. 32.)

Black Lace Lichen. *Anglis.*

Upon the rocks on the Highland mountains not unfrequent.

This grows in tufts of a black-fuscous, and often an entire black colour. It consists of smooth, rigid, glossy fibres, not bigger than a horse-hair, nearly of equal size in every part, about half an inch long, dichotomously and widely branched, terminated at the extremities with short bifid horns, and so interwoven with each other

other as to bear, according to *Dillenius*, some resemblance to *black lace* worn by the ladies.

We discovered no fructifications upon it, unless some very minute smooth protuberances, discoverable only by the microscope, about the extremities and other parts of the fibres, may be allowed to be term'd such. The plant, when moist, assumes a black olive color.

The figure of *Dillenius* above-cited, we are assur'd, belongs to the plant we have now described, from having been indulged with a sight of the author's specimens, which the figure refers to. And that the plant now described is the *L. pubescens*, or *Linnaeus*, we think there can be no doubt, from the characters he has given of it.

Linnaeus must, therefore, have erred in quoting the figure of our plant, as relating to a variety of his *L. Islandicus*. See above, under the article *L. Islandicus*; and also *Sp. pl. Lin. p. 1612*, opposite to variety γ of the same.

exilis 100. *L. filamentosus ramosissimus cœspitosus, filamentis capillaceis implexis opacis scabris. (Dillen. musc. t. 13. f. 9. quoad figuram.)*

Little black tufted Lichen. *Anglis.*

Upon the most naked rocks of the Highland mountains, often in their cavities or basons, and upon such as are moistened by the spray
of

of cataracts ; as on *Goatfield*, in *Arran*, and many other mountains.

It forms close black matted tufts, from the breadth of a shilling to that of a crown-piece, consisting of numerous very fine capillary filaments, about a quarter of an inch long, irregularly branched, and entangled together, their extremities generally a little curled or curved. These filaments are not smooth and glossy, but somewhat rough and opake, and, when moistened in water, are of a soft flexible substance, and dark olive colour, and, being highly magnified, appear scabby, or covered over with numerous black-green leprous tubercles. We discern'd no fructifications. The plant seems nearly related to the genus of *Conserva*, from its delighting in wet places, but the filaments of it not being jointed, determined us to give it a place among the *Lichens*.

hirtus 101. *L. filamentosus ramosissimus erectus tuberculis farinaceis sparsis. Sp. pl. 1623. (Dillen. musc. t. 13. f. 12. A.D.)*

Common rough Lichen, without shields. *Anglis.*

Upon old trees and in hedges frequent.

It is commonly about two inches, but varies from one to six inches in height. It generally grows erect,

erect, or perpendicular to the plain on which it is found. It is diffusely branched even from the root, and these branches are again subdivided into a few shorter secondary ones, all of them cylindrical, rigid, and elastic, and surrounded with numerous capillary fibres, either simple or slightly branched, and nearly horizontal; the whole plant generally of a greenish ash colour.

Sometimes the summits only of the branches are fibrous or bearded, and the remainder naked.

The branches and lateral fibres, when the plant becomes old, are covered over, and rendered quite rough with numerous farinaceous white tubercles; but no shields have yet been discovered upon it, which makes it doubtful whether it be not a sexual variety of the *L. floridus* hereafter described.

We have sometimes found a variety of this Lichen of a tawny colour, but not often.

vulpinus
102.

L. filamentosus ramosissimus erectus fastigiatus inæquali-angulosus. Sp. pl. 1623. (Dillen. musc. t. 13. f. 16. Oeder. den. t. 226.)

Gold wiry Lichen. *Anglis.*

Upon the trunks of old trees, but not common.

We found it once upon the ground, which is singular, on the craig of *Ailse*, a small island on the coast of *Airshire*.

It

It grows in erect tufts, from half an inch to two inches in height, of a fine yellow or lemon colour, which readily discovers it. The filaments which compose it are not cylindrical, but a little compress'd, and uneven on the surface, variously branched, the angles obtuse, and the branches straggling and entangled one with another.

The old specimens are covered with farinaceous warts, of a pale yellow color, intermix'd with which, we observ'd here and there a few very minute, smooth, papillary tubercles, with a puncture in the centre, which seem'd to indicate they were young shields to be afterwards expanded.

Linnaeus informs us, that the inhabitants of *Smoland*, in *Sweden*, dye their yarn of a yellow color with this Lichen; and that the *Norwegians* destroy wolves by stuffing dead carcases with this moss reduced to powder, and mix'd with pounded glass, and so exposing them in the winter season to be devoured by those animals.

floridus
103.

L. filamentosus ramosus erectus, scutellis radiatis.
Sp. pl. 1624. (*Ger. emac.* 1560. f. 5. *Moris. hist.* III. p. 635. f. 15. t. 7. f. 14. *ultima. Dillen. musc.* t. 13. f. 13. *opt. Michel. gen.* t. 39. f. 5.)

Upright flowering Lichen. *Anglis.*

Upon the branches of old trees, not very uncommon.

M m m

The

The description already given of the *L. birtus* (No. 101.) will do equally well for the present, with this addition only, that the branches of this are terminated with large, flat, pale, ash-color'd shields, ciliated or radiated on the margins with many long fibres.

It is not improbable but the *L. birtus* and this are only sexual varieties, and both are very nearly allied to the *L. plicatus*, and possess the same astringent virtues.

TREMELLA. *Gen. pl.* 1204.

Frustrificationes vix manifestæ in corpore gelatinoso.

nestoc. 1. TREMELLA plicata undulata. *Sp. pl.* 1625.
(*Michel. gen. t.* 67. *f.* 1. *Dillen. musc. t.* 10. *f.* 14.)

Jelly Rain Tremella. *Anglis.*

In pastures, and by the sides of gravel walks in gardens, after rains, not uncommon, in spring, summer, and autumn.

This is a membranaceous, pellucid, and gelatinous substance, without visible root; of a yellowish dull green color; assuming various forms, either round, angular, plaited, or folded together irregularly, like the intestines, or like a pocket handkerchief; an inch or two or more in diameter; soft to the touch when moist, but thin,

membranaceous,

membranaceous, and brittle when dry, and of a black fuscous color.

The ancient alchemists termed this vegetable *the Flowers of Heaven*, and flattered themselves with the hopes of its proving an universal menstruum; but all their researches ended in a bubble, except to shew that its constituent parts were a portion of phlegm, oil, an urinous volatile salt, and a little fix'd salt.

It is recommended by *Geoffroy* as an anodyne and vulnerary. A distillation of it, after being macerated for some time in water, is reputed to be an useful fomentation for pains in the joints. And a few grains of it reduced to powder, taken internally, and applied externally, have been extolled in ulcerous cases, in cancers, and in the fistula, but we fear upon no very good foundations.

For *T. Lichenoides*, *Sp. pl.* 1625, see our *L. Tremelloides*, N°. 54; and for *T. Auricula*, *Sp. pl.* 1625, see our *PEZIZA Auricula*.

verrucosa *T. tuberculosa solida rugosa. Sp. pl. 1625.*
2. (*Michel. gen. t. 67. f. 2. Dillen. musc. t. 10. f. 16.*)

Bladder warty River Tremella. *Anglis.*

Upon the rocks in the Highland rivulets, near the foot of the mountains, frequent.

M m m 2

This

This is a gelatinous substance, of a dull-green color, variously sinuated and folded, much like the mesentery in the human body. It greatly resembles the preceding, but consists of a double membrane a little thicker than that, and when immersed in water is blown up into various sinuated bladders. Its surface, when viewed with a microscope, appears warty, or to be composed, as it were, of small grains.

difformis 3. *T. subrotunda sinuosa difformis gelatinosa. Sp. pl.*
1626. (*Fig. nulla.*)

Sea Tremella. *Anglis.*

It grows upon *Conservæ* and other marine vegetables; found upon the rocks on the sea shore, at low water.

It is very like the preceding, but is readily known by its place of growth, and being of a softer substance.

hemisphærica 4. *T. hemisphærica sparsa. Sp. pl.* 1626. (*Fig. nulla.*)
Small hemispheric Sea Tremella. *Anglis.*

Upon *Fuci* and *Conservæ* growing on the sea rocks.

Its regular figure, smallness, and place of growth, distinguish it from its congeners. It is about the size of pease.

T. subglobosa

purpurea. 5. T. subglobosa sessilis solitaria glabra. *Sp. pl.* 1626.
(*Dillen. musc. t.* 18. *f.* 6.)

Little red-knobb'd Tremella. *Anglis.*

Upon the bark of decayed wood, or rotten sticks.

This is nothing but smooth, naked, sessile, convex tubercles of the size of pins heads, of a bright red or pink color; their substance soft and fleshy when moist, but solid and hard when dry, and cuts smooth. They bear a great resemblance to the tuberculate Lichens, but have no crust or ground. Some authors imagine them to be the rudiments of a species of Agaric. We can hardly assent to their opinion, as they seem always to maintain the same constant appearance. We should be rather disposed with *Haller*, to refer them to a new genus. See his *Hist. stirp. Helvet. No.* 2189. where he denominates them *Sphæria*, &c.

We compared our specimens with those of *Dillenius* at *Oxford*, and are therefore certain of the plant intended by that author, and that our description is right.

FUCUS. *Gen. pl.* 1205.

MASC. *Vesiculæ villis intertextæ.*

FEM. *Vesiculæ adspersæ granis immerfis apice prominulis.*

Semina solitaria.

M m m 3

FUCUS

serratus 1. FUCUS fronde plana dichotoma costata serrato-dentata, fructificationibus terminalibus tuberculosis.

Syst. Nat. edit. 13. p. 811. *Sp. pl.* 1626. (*Moris. hist.* 3. p. 648. *sect.* 15. t. 9. f. 1. *Baster. opusc. lib.* 6. p. 120. n. 3. *tab.* 11. *fig.* 3.)

Serrated Fucus, or Sea Wrack. *Anglis.*

Upon the sea rocks about low-water mark. Frequent at all seasons of the year, but produces its seeds in *July* and *August*.

It consists of a flat, radical, dichotomous leaf, about two feet long, the branches half an inch wide, serrated on the edges with dents of unequal size, and at unequal distances, and having a flat stalk or rib, divided like the leaf, and running in the middle of it through all its various ramifications.

The fructifications appear like tumid circular grains, with a puncture in their centre, generally crowded together for the space of an inch upon the summits of the branches, and frequently imbedded here and there throughout the whole surface of the leaf, but not implanted on mucilaginous vesicles, as in the following species.

Upon both sides of the leaf are frequently seen small pencil-like clusters of short whitish capillary fibres, which some have fancied to be male-flowers,

flowers, but others, with much more probability, have concluded to be vessels designed by nature to convey nutriment to the plant; both because these pencils are found upon the surface of the leaf in every stage of its growth, and at all seasons of the year, and because it is pretty certain that the *Fuci* receive no nourishment by the root, like other vegetables, but that their roots serve only to fix them to rocks, stones, shells, and other substances to which they adhere.

The plant when fresh is of a yellowish green or olive color, but dry'd turns somewhat blackish. Its substance is tough and leathern, or rather cartilaginous.

A small species of Coralline frequently creeps upon the surface of the leaf, called by *Linnaeus Sertularia pumila*. *Syst. nat.* 1306. and figured by Mr. *Ellis* in his History of Corallines. *Pl. V. n. 8. a. A. p. 9.* under the name of *Sea-oak Coralline*.

This species affords a much less proportion of lixivial salts than the following, eight ounces of the ashes of the burnt plant yielding only three ounces of fixed salt.

The *Dutch* cover their crabs and lobsters with this *Fucus*, to keep them alive and moist, and prefer it to any other, as being destitute of those

mucous vesicles with which the following abounds, and which would sooner ferment and become putrid.

vesiculosus 2. *F. fronde plana dichotoma, costata integerrima; vesiculis axillaribus geminis, terminalibus tuberculatis. Syst. nat. edit. 13. p. 812. Spec. pl. 1626. (Ger. emac. 1567. f. 4. Baster, opusc. lib. vi. p. 120. t. 11. f. 2.)*

Bladder Fucus, or Common Sea Wrack. *Anglis.*
Sea-ware. *Scotis.*

Feamainn. *Gaulis.*

Upon the sea rocks about low-water mark abundantly, producing its fructifications in *July* and *August*.

This has the same habit, color, and substance as the preceding, the leaf being dichotomous and ribbed throughout; but it manifestly differs from it in the following respects:—The edges of the leaf have no serratures, but are quite intire—In the disc or surface are immersed hollow sphaerical or oval air-bladders, hairy within, growing generally in pairs, but often single in the angles of the branches; about the size of large pease or hazel-nuts; which some authors suppose to be male-fructifications, but others, with more appearance of truth, to be only air-bladders destined to buoy up the plant in the

water—*Lastly*, On the summits or extreme segments of the leaves appear tumid vesicles, about three quarters of an inch long, sometimes oval and in pairs, sometimes single and bifid, replete with a clear viscid mucus interspersed with downy hairs; the surface of which vesicles is rendered warty, by the numerous grains or fructifications which are imbedded in it.—The whole disc of the leaf is covered, like that of the preceding species, with pencils of fine hair-like fibres, and scattered over on both sides with numerous small grains or tubercles.

var?

The plant varies from six inches to two feet in length, and the ramifications from one quarter to an inch in width. The leaves have their edges sometimes curled or undulated, and sometimes contorted; and beset either with many or few air-bladders. The warty vesicles are either single, in pairs, or bifid; of various sizes; and either acutely oval, or obtuse; whence the many varieties recorded by authors.

The *F. vesiculosus* is applied to various uses in œconomy and medicine.

It is well known to be an excellent manure for land, to which purpose it is often applied, in the maritime parts of *Scotland* and other countries.

In

In the islands of *Jura* and *Skye* it frequently serves as a winter-food for cattle, which regularly come down to the shores at the recesses of the tides to seek for it. And sometimes even the stags have been observed, after a storm, to descend from the mountains to the sea-sides, to feed upon this plant.

Linnaeus informs us, that the inhabitants of *Gothland*, in *Sweden*, boil this *Fucus* in water, and mixing therewith a little coarse meal or flour, feed their hogs with it; for which reason they call the plant *Swintang*. And in *Scania*, he says, the poor people cover their cottages with it, and sometimes use it for fuel.

In *Jura*, and some other of the *Hebrides*, the inhabitants dry their cheeses without salt, by covering them with the ashes of this plant; which abounds with such quantity of salts, that from five ounces of the ashes may be procured two ounces and a half of fixed alkaline salts, that is half of their whole weight.

But the most beneficial use to which the *F. vesiculosus* is applied, in the way of œconomy, is in making *pot-ash* or *kelp*, a work much practised in the western isles.—The manner of doing it is this: The plant is collected and dried carefully upon the shore in small heaps. When thoroughly dry, a pit is dug in sandy ground, about

about seven feet wide, and three deep, lined with stones. In this pit a fire is kindled with small sticks, and the dried *Fucus* is laid upon it by little and little, and burnt. When a sufficient quantity is consumed for the purpose, and burnt to a certain degree, it appears in the pit like red-hot ashes. The operator then (to prevent its being reduced entirely to ashes) with an iron rake stirs about briskly this hot matter from one side of the pit to the other, mixing it well together, till at length it begins to congeal, and vitrify. The salts being now all melted, the matter is left to cool in the bottom of the pit, where, as in a mould, it concretes into a solid mass, call'd *Kelp*, which, when cold, is broken out of the pit, and carried to market for the use of the soap and glass-makers.

There is great difference in the goodness and price of this commodity, and much care and skill required in properly making it. That is esteemed the best which is hardest, finest grain'd, and free from sand or earth.—The price of *Kelp* in *Jura* is £. 3. 10 s. per ton, and about forty or fifty tons are exported annually from that island. So great a value is set upon this *Fucus* by the inhabitants of that place, that they have sometimes thought it worth

worth their while to roll fragments of rocks and huge stones into the sea, in order to invite the growth of it.

Its virtues in the medical way have been much celebrated by Dr. *Russel*, in his *Dissertation concerning the Use of Sea-water in the Diseases of the Glands*. He found the saponaceous liquor or mucus in the vesicles of this plant to be an excellent *resolvent*, extremely serviceable in dispersing all scorbutic and scrophulous swellings of the glands. He recommends the patient to rub the tumor with these vesicles bruis'd in his hand, till the mucus has thoroughly penetrated the part, and afterwards to wash with sea-water. Or otherwise, to gather two pounds of the tumid vesicles, in the month of *July*, when they are full of mucus, and infuse them in a quart of sea-water, in a glass-vessel, for the space of fifteen days, when the liquor will have acquired nearly the consistence of honey. Then strain it off through a linen cloth, and rub this liquor with the hand, as before, three or four times a-day, upon any hard or scrophulous swellings, washing the parts afterwards with sea-water, and nothing can be more efficacious to disperse them. Even schirrosities, he says, in women's breasts have been dispell'd by this treatment.

The

The same author, by calcining the plant in the open air, made a very black salt powder, which he called *Vegetable Æthiops*, a medicine much in use as a *resolvent* and *deobstruent*, and recommended also as an excellent *dentrifice*, to correct the scorbutic laxity of the gums, and take off the foulness of the teeth.

divaricatus F. fronde plana dichotoma integerrima; axillis
3. divaricatis, vesiculis axillaribus geminis. *Syst.*
nat. edit. 13. p. 812. *Sp. pl.* 1627. (*Moris.*
hist. Ox. p. 647. *sect.* 15. t. 8. f. 5. *ordinis*
inferioris.)

Divaricated Fucus. *Anglis.*

Upon the shore about *Leith* and *New-Haven.*

Mr. Yalden. VII. VIII.

Linnaeus distinguishes this as a species, but *Gmelin* and other authors, with more reason, consider it only as a variety of the *F. vesiculosus*. We have kept it distinct, for the sake of the author whose method we follow.—The plant is about six inches long, and the ramifications a quarter of an inch wide, the stalk or rib near the root generally naked. The leaf is commonly furnished with many air-bladders, mostly in pairs, but towards the summits of the branches, and often lower down, a single air-bladder is placed in the angle of the ramifications, and another pair

pair immediately under it. The angular one is often bifid or lunular, which occasions a wide stradling or divarication in that angle of the leaf. The fructifications are similar to those of the preceding, but not so large, the plant itself which produces them being smaller.

inflatus 4. F. fronde plana dichotoma integerrima punctata ovato-lanceolata inflata, apice diviso. *Syst. nat.* 812.

F. fronde bifida, laciniis ovato-lanceolatis inflatis, apice bifidis. *Sp. pl.* 1627. (*Fig. nulla fidenda.*)

Inflated Fucus. *Anglis.*

Upon the shore near *Mussleburgh.*

Mr. Xalden. VII. VIII.

This has all the habit of the *F. vesiculosus*, and is supposed by *Gmelin* to be only a variety of it. Its chief character consists in this, that the uppermost segments of the leaf are inflated longitudinally, as if air had been blown in between the two surfaces. These inflations sometimes run singly on one side of the middle rib of the leaf, but more frequently another runs parallel to it on the opposite side. They seem to have much of the same nature and use with the air-bladders in the *F. vesiculosus*. And in some specimens a few air-bladders are found placed here and there in the angles of the branches.

The

The vesicles which contain the fructifications are large, obtuse, and tumid, replete with mucus, and grow either single, bifid, trifid, or in pairs; their surface warty, with numerous grains or capsules imbedded in it. Each grain or capsule has a puncture in the centre, and contains about twenty or thirty seeds, as in all the foregoing species.

The plant varies in length from six inches to a foot or more, and the stalk or middle rib is naked near the root. It is sometimes twisted spirally in its growth, like the following.

Spiralis 5. F. fronde plana dichotoma integerrima punctata, inferne lineari canaliculata, fructificationibus tuberculatis geminis. *Syst. nat. edit.* 13. p. 812. F. fronde dichotoma integra, caule folium percurrente, inferne nudo, vesiculis verrucosis terminalibus. *Sp. pl.* 1672.

(*Ger. emac.* p. 1567. fig. 4. ad dextram. *Moris. hist. Ox. sect.* 15. t. 8. f. 10. *Baster. opusc. subsec. lib.* vi. p. 120. t. 11. f. 1. *Oeder. Dan.* t. 286. *melior.*)

Twisted Fucus. *Anglis.*

Upon the shore near *Leith* and *New-Haven*. Mr. *Xalden*. VII. VIII.

It has the whole habit of the *F. vesiculosus*, except that, so far as we have seen, it is destitute of

of air-bladders. The stalk or rib is naked at the base, being made so by the violence of the waves, but we never observed it channell'd, as *Linnaeus* mentions. The branches of the leaf are very apt to be twisted spirally in their growth, so as to be expanded with difficulty; and their edges, though naturally intire, are often torn or jagged by the rocks and waves even to the middle rib, appearing as if cut into lanceolate segments.

The seminal vesicles grow in pairs at the extremities of the segments, thick, obtuse, and generally bifid.

β. The plant is usually a foot long; but there is a small variety of it not above five or six inches, which is more branched.

γ. Another variety also occurs, of the usual length, but which produces seminal vesicles of an oval acute form. All these are by *Gmelin* considered as varieties only of the *F. vesiculosus*.

distichus 6. *F. fronde plana dichotoma integerrima lineari, fructificationibus tuberculatis mucronatis. Syst. nat. edit. 13. p. 812.*

F. filiformis. Hudf. Fl. Angl. p. 472. n. 27.

F. filiformis. Gmel. hist. fucor. p. 72.

(*Oed. Dan. t. 351. figura dubia quoniam frons ener-
vis videtur. Gmel. fucor. tab. 1. A. fig. 1.
bona.*)

Narrow-

Narrow-leav'd wiry-stalk'd Fucus. *Anglis.* This was found at *Loch Stennis*, in *Orkney*, and communicated by Dr. *Hope*.

The stalk is naked, very slender, wiry, and dichotomous.

The whole plant is about five inches long, the ramifications or segments of the leaf one-tenth of an inch wide; plain, linear, intire on the edges, destitute of air-bladders, dichotomous, and rib'd throughout; of an olive colour, and cartilaginous substance, like the *F. vesiculosus*.

The fructifications appear in the summits of the branches, which still continue their linear-pointed shape, but grow tumid and warty with seminal grains. The whole leaf is also dotted with two longitudinal rows of seminal grains, one on each side of the middle rib.

ceranoides
7.

F. fronde plana dichotoma integerrima punctata lanceolata, fructificationibus tuberculatis bifidis terminalibus. *Syst. nat. edit. 13. p. 812.*

F. fronde dichotoma plana integra, apicibus bifidis vesiculosis. *Sp. pl. 1626.*

(*Moris. hist. Ox. f. 15. t. 8. f. 11? et ejus varietas f. 15. t. 8. f. 13. Gmel. fucor. p. 115. t. 7. f. 3. et ejus varietates, t. 7. f. 1. et 2.*)

Buckshorn Fucus. *Anglis.*

N n n

Upon

Upon rocky shores, at low-water mark, frequent.

VII.

This species varies almost without end.

The most general appearances of it answer however to the following description.

Many radical leaves arise from the same root or base, and spread upon the rocks in a circular form, or (as the water often leaves them) in the form of an arc of a circle. Each leaf is most commonly about four inches long, and one-eighth of an inch wide, but varies from one to seven inches in length, and from one-twelfth to an inch in breadth; of a tough cartilaginous substance, horny when dry, pellucid when held between the eye and the light; often of a bright purple color, sometimes of a green color, most usually a purple intermixed with green, and frequently, when cast upon the shores, and expos'd to the sun and air, of a yellowish-white or horn-color.

Again, each leaf is plane or flat on both surfaces, intire on the edges, of an uniform texture, without rib, simple, undivided, and narrowest at the base, wider and dichotomous upwards, but divided into so many segments towards the extremity, that, taken collectively, they resemble a *Corymbus*. Each segment is bifid at
the

the summit; the two lobes generally short and obtuse, but often longer and more acute.

The fructifications appear in the summits of the segments, imbedded singly, one for the most part near the apex of each lobe, resembling a minute red wart or vesicle, of the size of the smallest pin's head, and full of numerous seeds. Sometimes these fructifications are seen lower in the substance of the leaf.

Such is the description to which most of the specimens will agree. There remain, however, several remarkable varieties which deserve to be noticed, and which, if overlooked, would tend not a little to confound the learner.

β. The first is the *Fucus ceranoides albidus, ramulorum, apicibus stellatis*. *Raii Synops. p. 44. n. 18.*

Stellated or digitated Buckshorn Fucus. *Anglis.*

The uppermost segments in this are numerous, and often crowded; not properly dichotomous, but growing either in a stellated or digitated form. This is often found upon the shores bleached by the sun and air.

γ. The second is the *Alga membranacea purpurea parva, segmentis latis multum laciniatis et crispatis*. *Raii syn. p. 44. sub not. ad n. 16.* To which the *Fucus sive Alga membranacea candida segmentis plurimum laciniatis*, of *Moris. hist. Ox.*

sect. 15. t. 8. f. 6. is suppos'd to belong; but the figure ill represents it.

Thin ragged Buckshorn Fucus. *Anglis.*

The stalks of this are round or filiform at the base, but dilated towards the summits into thin dichotomous membranes, much jagged at the extremities, and frequently curled, either of a purple, a whitish, or a greenish color mixed with purple and white.

lacerus *δ.* Sometimes the summits and edges of the segments in the last variety are curiously fringed or ciliated with small proliferous excrescences.

This is the *F. fronde dichotoma plana margine lacero.* *Lin. Sp. pl. 1627.*

Ragged and fringed Buckshorn Fucus. *Anglis.*

Another very remarkable variety of this *Proteus-like* vegetable is that mentioned by *Ray* in his *Synopsis*, p. 44. *sub not. 16.* under the name of

Alga membranacea purpurea parva, segmentis latis verrucosis, paululum sectis; and in the same page, *n. 19.* by the appellation of

Fucus parvus cauliculis teretibus, summatibus membranaceis dilatatis et laceratis. See its figure *Moris. hist. Ox. sect. 15. t. 8. f. 13.*

Warted Buckshorn Fucus. *Anglis.*

Upon the coast about *Leith* and *New-Haven.*
Mr. *Yalden.* This

This is generally about two inches long, the segments half an inch, and sometimes an inch wide, commonly not more than twice divided; the stalk narrow, and often filiform at the base; but what more particularly distinguishes this variety is, that both surfaces of the leaf are covered all over with numerous small wart-like excrescences, or short proliferous ligaments, which are in reality a kind of seed-vessels; for we have often observ'd a red spot within them, consisting of minute seeds.

ζ. There is yet another variety of this warted kind, the leaves of which are four or five inches long, much more branched, and the segments only one-sixth or one-eighth of an inch wide; but in other respects like the foregoing.

Narrow-leav'd warted Buckshorn Fucus. *Anglis.*

On the rocks of *Cramond* island, in the *Forth*.

VII.

All the other varieties which we have observ'd may be reduced to one or other of the above described.

canaliculatus 8.

F. fronde plana dichotoma integerrima canaliculata lineari, fructificationibus tuberculatis bipartitis obtusis. *Syst. nat. edit. 13. p. 812.*

FUCUS excisus. *Sp. pl. 1627. n. 10. et Hudf.*

Angl. p. 468. (Moris. hist. Ox. sect. 15. t. 8.

N n n 3

f. 12.

*f. 12. Gmel. hist. fucor. p. 73. tab. 1. A. f. 2.
Reaumur. act. Gall. 1711. p. 299. fig. opt. Oed.
Dan. t. 214. fig. bon.*

Furrow'd Fucus. *Anglis.*

We observ'd it upon rocky shores in the *Isle of Bute*, and many other places. VII.

This is generally about three or four inches long, narrow, linear, ribless, smooth, intire on the edges, dichotomous, of a tough cartilaginous substance, and olive colour. But the principal character consists in this, that one side of the leaf is convex, the other channell'd throughout. The channel is about one-eighth of an inch wide.

When the plant is in its fructified state, the summits of the ramifications become dilated and tumid for about the length of half an inch, assuming the appearance of vesicles, growing either bifid or in pairs, and covered with small tubercles perforated in the centre; each of which tubercles is a capsule full of minute seeds.

nodosus 9. F. fronde compressa dichotoma, foliis distichis integerrimis, vesiculis innatis solitariis dilatatis. *Syst. nat. edit. 13. p. 812.* F. caule compresso dichotomo, medio ramorum in vesiculam dilatato. *Sp. pl. 1628. (Ger. emac. 1568. f. 6. Moris.*

Moris. hist. Ox. p. 647. sect. 15. t. 8. f. 2. ordinis medii. Reaumur. act. Gall. 1712. p. 26. f. 31. Baster. opusc. VI. p. 121. t. 11. f. 5. Oed. Dan. t. 146. Gmel. hist. fucor. p. 78. tab. 1. B. fig. 1. et var. fig. 2.)

Knobbed Fucus. Sea-Whistles. *Anglis.*

Upon rocky shores common. VII. VIII.

The stalks of this species are commonly about two feet long, and nearly a quarter of an inch wide; but are found, from a foot to two yards in length, lying procumbent on the rocks; their substance hard and cartilaginous; their color olive when fresh, but blackish when dry.

These stalks are linear, compress'd, and generally dichotomous, but sometimes the branches grow pinnated. They are furnished with flat, sessile, wedge-shaped, or oblong blunt leaves, about half an inch in length, growing distichous out of the edges of the stalks, either opposite or alternate, and either one, two, three or more, from the same base or socket.

These leaves, in the fructified state, become turgid at the extremities, and full of *Mucus*, in which are imbedded numerous small grains or seed-bearing capsules.

In the middle of the stalk and branches grow, one above another, at unequal distances, large oval hollow air-bladders, wider than the stalk itself,

and hairy within. These serve to buoy the plant up in the water.

This Fucus I have frequently seen used by Fishermen to cover their oysters with, in order to preserve them alive and moist.

The stalks are often covered with black clusters of the *Conserva Polymorpha* of *Linnaeus*. *Sp. pl.* 1636.

Boys amuse themselves with the air-bladders, by cutting the larger ones transversely, near the end, and making whistles of them.

There is a slight variety of this Fucus, having the edges of the stalks serrated. See *Gmel. hist. fucor. tab. 1. B. fig. 2.*

loreus 10. *F. fronde filiformi compressa dichotoma, undique utrinque tuberculata. Syst. nat. edit. 13. p. 813. FUCUS elongatus. Sp. pl. 1627. FUCUS linearis. Hudsf. Flor. Angl. p. 467. (Ger. emac. p. 1568. fig. 5. Reaumur. art. Gall. 1712. p. 24. f. 2. bon. et Gent. Magaz. 1756. p. 64.)*

Long narrow-leav'd Fucus, or Sea Thongs, *Anglis.*

We observ'd it upon the sea-shores not uncommon. VII. VIII.

This is generally two or three feet long, the thongs or segments about one-fifth of an inch wide. The substance thick, coriaceous, and opaque,

opaque, viscid and slippery to the touch; of a dirty yellow color when fresh, but blackish when dry.

The first rudiment of this *Fucus* exactly resembles a *Peziza*, or a smooth circular concave disc like a saucer, an inch or more in diameter, of a livid color, and tough coriaceous substance, supported by a cylindrical foot-stalk, about half an inch long.

From the centre of this disc, when nearly arrived to its full size, arise one, two, or more stalks, of the length and width above-mentioned, somewhat flattened or compress'd, and dichotomously divided into long, narrow, linear segments or thongs, taper at the ends, and void of rib or nerve.

The whole surface of the plant, when in fructification, is covered with small tubercles or mucous vesicles, perforated at the top, and full of seeds.

siliquosus

II.

F. fronde compressa ramosa, foliis distichis alternis integerrimis, fructificationibus pedunculatis oblongis mucronatis. Syst. nat. edit. 13. p. 813. Sp. pl. 1629.

(*Ger. emac. p. 1569. fig. 7. Seb. Tb. 11. p. 186. t. 95. f. 3. Oed. Dan. t. 106. Gmel. hist. fucor. p. 81. t. 2. B. bona.*)

Podded

Podded Fucus. *Anglis.*

Upon rocky shores, but not very frequent. VII.
VIII.

This Fucus varies from one to four feet in length; is of a hard coriaceous substance, a dark olive color when fresh, but quite black when dry.

The root or base by which it is fastened to the rocks is a hard expanded horny substance, as in most of the larger species of this genus.

From this base arises a thick, opaque, narrow, compress'd, waved stalk, nearly of equal size throughout, greatly branched, the branches alternate, both dented on the edges with the rudiments of Footstalks.

The fructifications resemble little flat pods, about half an inch long, of a narrow elliptic form, having a point or beak at the extremity; growing alternate on short peduncles out of the edges of the stalk and branches, but most numerous near their summits.

These pods, on the *outside*, are transversely furrow'd, *within*, full of a viscid liquor, containing seminal vesicles, parted by transverse *Septa* or *Diaphragms*.

The plant is also furnished with alternate lanceolate leaves, much longer and narrower than the pods. But the pods are in reality no other than these leaves in a state of fructification, so altered

altered by growing turgid with mucus and seminal vesicles.

concatenatus? 12.

F. fronde filiformi ramosissima, ramulis dichotomis, vesiculis moniliformibus distantibus innatis foliis subulatis. *Syst. nat. edit.* 13. p. 814. *Sp. pl.* 1628. (*fig. non invenio, nisi ea sit Oeder. Dan. t.* 591. *quæ similis, sed ibi vocatur F. granulatus.*)

Necklace Fucus. *Anglis.*

Upon the coast about *Leith* and *New-Haven*; a fragment of it was communicated by Mr. *Yalden*. VIII.

This is generally about six or eight inches long, of a tawny olive color, and cartilaginous substance.

The base of the stalk is thick, hard, and tough, knobbed or unequal on the surface with the relicks of old branches. At the distance of an inch or two from the root, it throws out about half a dozen narrow filiform branches, which again shoot out many lesser secondary ones, (the lowermost always longest) growing sometimes opposite, but generally alternate; and these secondary ones are in the same manner branched a third time; when these last ramifications become a little compressed and lanceolate, their edges furnished with small, alternate, subulate

subulate leaves, resembling dents or spines, a little incurv'd. The inferior branches are also furnished with the same kind of leaves or spines, but they are most frequent towards the extremities.

Such is the description of the unfructified plant; but in a state of fructification, it assumes a different appearance. The stalks in the second and third division of the branches become then inflated in the middle with small oblong vesicles or air-bladders, placed at a little distance two, three, or four one above another, like beads on a necklace; each of which vesicles has commonly one or two of the fore-mentioned subulate leaves or spines growing upon it.

The extremities of the branches also, which before were very narrow, and a little compress'd, now become tumid and subulate, covered all round with numerous fructifications, crowded together like small warts, each with a puncture in the centre, and within full of seeds. These tumid extremities still retain their spine-like leaves growing out of their sides, as before they were fructified.

aculeatus

13.

F. fronde filiformi compressa ramosissima, dentibus marginalibus subulatis alternis erectis.
Syst. nat. edit. 13. p. 814. Sp. pl. 1632. (Moris. hist.

*hist. sect. 15. t. 9. f. 4. exterior ad dextram
bona. Oeder. Dan. t. 355. Gmel. hist. fucor.
p. 130. t. 12.*

Prickly Fucus. *Anglis.*

Upon the sea-shores not unfrequent.

This is from a foot to eighteen inches long; its substance thin and grass-like, sometimes cartilaginous; its color usually an olive green, but sometimes tawny.

The stalk is very small, thread-shaped, compressed, and greatly branched.

The branches are very long, narrow, linear, alternate, and generally subdivided once or twice more into similar, narrow, tender, grass-like segments, edged on both sides with fine, short, alternate, erect, inoffensive prickles, or sharp dents, of the same color and substance as the branches.

The fructifications, so far as we can learn, have never yet been discovered; but its place of growth and whole habit denote it to be a *Fucus*.

We have sometimes seen what is supposed by authors to be a variety of the foregoing; but as it puts on a very different face, it deserves particular notice.

The

caudatus β. The stalk and branches of this are round or cylindrical, and not compress'd. The branches have much more numerous subdivisions. The substance of the whole is quite tough and cartilaginous, and the color tawny. The prickles are much the same as in the preceding. *Gunner* compares it, not amiss, to the tail of a sorrel horse. We suspect it to be a distinct species.

tuberculatus 14. F. fronde filiformi tereti ramosissima ramis alternis, ramulis confertis tuberculatis, tuberculis subrotundis distantibus innatis. *Solander*.

FUCUS *purpureus*. *Huds. Fl. Ang.* 471. n. 22.
(*fig. non invenio.*)

Red tuberculated Fucus. *Anglis.*

Upon the sea-shores frequent. VIII.

This is generally from nine inches to a foot in length, but varies more or less. Its substance is cartilaginous, but very tender. Its color commonly red or purplish, except the stalk, which is generally pale or whitish. And the whole plant becomes white when exposed on the beach to the sun and air.

The stalk is perfectly round or cylindrical when growing, and about the size of packthread, continued generally throughout from the root to the extremity of the plant, but sometimes is

divided irregularly into many other lesser branches near the base.

In either case, the principal stalk is greatly branched; the branches alternate, divided and subdivided, so as to end at last in many fine, acute, capillary segments, all cylindrical, or so very little compressed as to be scarcely discernable by the naked eye.

The fructifications are implanted in the smaller divisions of the branches like beads on a necklace. They appear like little grains or tubercles, of a round or oval figure, hardly so big as the smallest pin's head, placed at a little distance one above another, the uppermost always terminated with an acute segment. These tubercles, when held between the eye and the light, appear transparent, and when nearly ripe, have a red spot in their centre, which we suppose to be a cluster of minute seeds.

β. A slight variety of the preceding sometimes occurs, the stalk of which is a little compress'd, zigzag in its growth, and often gouty or unequal, especially at the angles of the branches. The summits of the ramifications are sometimes furnished with small tendrils; and large irregular wrinkled warts grow on sideways to the branches, particularly at their angles. These
warts

warts we conceive to be analogous to the knots or wens frequently observ'd on large trees.

It has the color, substance, and habit of the foregoing, and we believe it to be nothing more than a variety of it.

flagelliformis 15. F. fronde filiformi tereti ramosa, ramis alternis subdistichis longissimis, uniformibus. *Oeder.*
(*FUCUS longissimus.* *Gmel. hist. fucor. p. 134. tab. 13. bona. Oed. Dan. t. 650. opt.*)

Whip-cord Fucus. *Anglis.*

Upon the sea-shores frequent, as about *New-Haven*, &c. VIII.

This is found from a foot to two feet in length.

Its color, when fresh, is generally a dark dull red, sometimes a greenish yellow, but black when dry. Its substance is cartilaginous, but tender and slippery.

The stalk and branches have an uniform thickness, of the size of a thread, or the smallest strings of a fiddle.

The branches generally grow distichous and alternate, but often without any order. These again are usually subdivided once more into alternate secondary branches, which are very long, and quite simple to the ends.

The fructifications are seldom found. They appear in the form of small sessile globules or tubercles,

bercles, placed here and there on the sides of the branches.

We do not find this species described by *Linnaeus*; but it probably is that intended by *Dillenius*, under the denomination of *FUCUS teres rubens minus ramosus in longum protensus*. *Raii Synops.* p. 51. n. 53.

plicatus 16. F. fronde capillari uniformi ramosissima, ramulis subsecundis implicatis diaphanis. — *FUCUS plicatus*. *Huds. Fl. Ang.* p. 470. n. 19. (*Pluk. phyt.* t. 184. f. 2. *Gmel. hist. fucor.* p. 142. t. 14. f. 2. *bona*. *Oeder. Dan.* t. 408.)

Matted or *Indian-grass* Fucus. *Anglis.*

Upon the sea-shores in many places, as about *New-Haven*, &c. VIII.

It is generally about three or four, but sometimes six inches long. Its color, after being exposed to the sun and air, yellowish or auburn. Its substance pellucid, tough, and horny, so as to bear a strong resemblance to what the anglers call *Indian Grass*, that is, the tendrils issuing from the extremities of the ovary of the dog-fish.

The growing plant exhibits a very different appearance from those specimens which are cast up, and have lain expos'd on the beach.

When recent, it answers to the following description:

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tion:

tion :—The stalk and branches are of an uniform size, less than the smallest string of a fiddle—The whole plant is either of a purple color, or else (which is more generally the case) the base is purple, and the extremities of the color of isinglass—The branches are numerous, but so entangled with one another, that their natural growth is not easily distinguishable—They are sometimes alternate, dichotomous, and forked at the extremities; sometimes opposite, and simple at the ends; but more often grow one above another on the same side of the incurved stalk.

The fructifications appear like little warts or globules, growing without order on the sides of the branches.

The dry'd plant, which has lain for some time on the beach, is of one uniform color of isinglass.

The branches are waved, curled at the extremities, very much entangled together, and as brittle as glass.

fastigiatus F. fronde filiformi dichotoma ramosissima fastigiata

17. obtusa. *Lin. syst. nat. edit. 13. p. 815. n. 29.*

Sp. pl. 1631. (Moris. hist. Ox. sect. 15. t. 9.

f. 9. ordinis medii. Gmel. hist. fucor. p. 106.

t. 6. f. 1. Fructificatio. Oeder. Dan. t. 393.

opt.)

Short-

Short-forked Fucus. *Anglis.*

Upon the sea-shores frequent, in basons of water left by the tides among the rocks. VIII.

It varies from three to six inches in length. Its color is sometimes a dark fuscous red, sometimes olive, but dries black. Its substance cartilaginous, somewhat thick and opake.

The stalks are perfectly cylindrical, of the size of packthread, dichotomously branched; the branches nearly of equal size and height, terminating in little short forks.

The fructifications appear in the summits of the branches, which swell into the form of short oval acute vesicles, a little compress'd and furrow'd on the margin, and which open at the top, and discharge their prolific mucous contents.

The uppermost segments of this plant, particularly in its dry state, are generally surrounded with prominent circles or rings, which are variously placed, sometimes just under the divisions of the branches, and sometimes above them.

This *Fucus*, and the following, have their branches frequently infested with a whitish hairy membrane, which is the *FLUSTRA pilosa*. *Lin. syst. nat. p. 1301. Ellis. cor. 73. t. 31. f. A.*

furcellatus F. fronde filiformi dichotoma ramosissima acuminata. *Syst. nat.* p. 815. *edit.* 13. *Sp. pl.* 1631. n. 30. FUCUS *lumbricalis.* *Huds. Fl. Ang.* p. 471. n. 25.

(*Moris. hist. Ox. secl.* 15. t. 9. f. 4. *ordinis superioris, bona.* *Gunner. act. Nidros.* 4. p. 82. t. 5. f. 4. *Gmel. hist. fucor.* 108. t. 6. f. 2. *Oeder. Dan. t.* 419. *opt.*

Long-forked Fucus. *Anglis.*

Upon the sea-beach frequent. VIII.

This is so nearly related to the preceding, that the limits are hardly to be distinguished. It is probably no more than a variety; but as the great *Linnaeus* has kept them asunder, we choose to continue them separate, at least till we have better authority to conjoin them.

It is generally of a black fuscous color when full grown, the young specimens being dark-red or greenish.

The substance and manner of growth is the same as in the foregoing, but the plant itself is generally taller, the branches thicker, and, which is the principal difference, the terminating forks are subulate, acute, and nearly an inch long, whereas those of the other are seldom more than two lines.

The forks, in a state of fructification, become tumid and full of mucus, as in the preceding.

CRYPTOGAMIA ALGAE



And the same kind of rings which are mentioned to grow on the foregoing are sometimes found upon this.

Both, when expos'd for some time on the beach, turn of a yellowish white color.

palmatus
19.

F. fronde palmata plana. *Syst. nat. edit.* 13.
p. 815. *Sp. pl.* 1630. n. 26. FUCUS *dulcis*.
Gmel. hist. fucor. p. 189. (*Moris. hist. Ox. sect.*
15. t. 8. f. 1. *Gunner. act. Nidros.* 4. t. 9.
Gmel. hist. fucor. p. 189. t. 26.)

Palmated or sweet Fucus. *Anglis.*

Dulse or Dils. *Scotis.*

Dulish. *Hibernis.*

Duilliosg. *Gaulis.*

Upon the sea-rocks plentifully, particularly on the western coast, and the shores of the *Hebrides*.

Its substance is membranaceous, thin, and pellucid.

Its color red; sometimes green with a little mixture of red. Its length generally about five or six inches, but varies from three inches to a foot. Its manner of growth fan-shaped, or gradually dilated from the base upwards. Its divisions extremely various.

The stalk is very short and cylindrical, sometimes hardly any at all.

From two to six leaves arise generally from one root, some of them frequently simple, and either lanceolate or obtusely-oval; but more

usually fan-shaped and compound; from one to six inches in the widest part, variously divided into two, three, five, or more segments, like a man's hand; some of which segments are often bifid or trifid at the extremities, assuming a kind of dichotomous growth.

The margins of the leaves and segments are generally intire, but sometimes undulated and sometimes proliferous.

The fructifications are unknown, but we have sometimes observed small, oval, pedunculated ligaments growing out of the edges of the leaves, which seem to be rudiments of future plants, and which dropping perhaps from the parent in due time, like the young of Polypes, may answer the ends of propagation with the same facility as seeds.

Though the substance of this plant is membranaceous, and often so tender and delicate, in its dry state, as to move in a warm hand as if animated; yet it must be observ'd, that it varies much in thickness, and is sometimes so firm as to resemble a piece of leather; but is always transparent.

In this last state it is generally large, as well as thick, and seems to be the kind mentioned by Mr. Ray under the name of

FUCUS

β. FUCUS *scoticus latissimus edulis dulcis.* *Synops.*
p. 46. n. 30.

The inhabitants both of *Scotland* and *Ireland* take pleasure in eating this plant: sometimes they feed upon it like a sallad, when fresh taken out of the sea; but the more usual method is first to dry it, then roll it up together, and chew it like a plug of tobacco. And this they do more for the pleasure arising from habit, than from any supposed virtues in the plant itself.

The inhabitants also of the islands in the *Archipelago*, as we learn from *Steller*, are very fond of this plant. They sometimes eat it raw, but esteem it most when added to ragouts, oglios, and such like dainties, to which it gives a red color, and dissolving, renders them thick and gelatinous.

In the isle of *Skye* it is sometimes used in fevers, to promote a sweat, being boil'd in water, with the addition of a little butter. In this manner it also frequently purges.

The dry'd leaves infus'd in water exhale the scent of violets.

digitatus F. fronde palmata, foliolis ensiformibus, stirpe tereti. *Lin. syst. nat. edit. 13. p. 815. (Ger. emac. 1570. f. 9. Gouan. flor. 61. t. 3.)*

O o o 4

Fingered

Fingered Fucus, Sea Girdle, and Hangers. *Anglis.*

Upon the sea-shores frequent.

This is commonly about a yard high, but varies more or less. The substance is tough and cartilaginous, the color olive.

The root consists of thick horny fibres, adhering to rocks and stones. The stalk is cylindrical, varying from two inches to two feet in length, and from the size of a goose-quill to that of a walking-stick in thickness.

The summit of the stalk suddenly dilates into a plain broad leaf, which is often a foot wide, divided almost to the base into sword-shap'd ribblefs segments, about a cubit long, and from four to twelve or more in number.

The edges of the segments are generally intire, but sometimes a little undulated.

The fructifications we have never observ'd, but from analogy it is reasonable to conclude them to be similar to those in the *FUCUS saccharinus*, described a little below.

This, and indeed almost every species of Fucus, is used in *Scotland* as a manure for land.

polychides F. fronde palmata, foliolis ensiformibus, radice
21. tuberosa cava, stirpe plana marginibus plicatis.
Species Linnæo non descripta.

(F. pal-

(*F. palmatus* Gmel. *hist. fucor.* p. 202. *tab.* 30.
sed non omnia synonyma. *F. arboreus polyschides* caule plano et tortuoso. *Reaumur. act.*
Gall. 1712. p. 21. t. 1. *optimè.*)

Great furbelow'd Hangers. *Anglis.*

Upon the sea-shores with the preceding, but not common, as at *J—Columb-kill*, &c. We have observ'd the same also in *South Britain*, upon the coast of *Cornwall*, where it grows so large that a single specimen is sometimes a load for a man's shoulders.

Its general height is about a yard, often less, and sometimes a great deal more, even three or four yards. Its substance and color is the same as of the last described.

The root is an irregular bulb or tubercle, often as large as a child's head, of a horny cartilaginous substance, hollow within, and covered outwardly with short rudiments or stumps of radicles, so as to appear echinated.

The stalk is commonly about two feet long, and two inches wide, linear, plain, and ribless; of a thicker substance than the leaf; twisted at the base, and (except in its youthful state) ruffled or furbelow'd on the margins, particularly near the root.

The summit of the stalk expands suddenly into a large wide leaf, divided into sword-shaped rib-
 lefs

less segments, a foot or more in length, about an inch in breadth, and from six to thirty in number. These segments are intire on the edges, often bifid, and sometimes dichotomous.

The fructifications we have never observed, but suppose them to be like those of the *FUCUS saccharinus*.

Though this plant has a strong resemblance to the foregoing, it evidently appears from the description to be distinct; so perfectly distinct, that it is difficult to conceive how any naturalist should confound them.

esculentus

22.

F. fronde simplici indivisa ensiformi, stirpe tetragona pinnata folium percurrente. Lin. Syst. nat. edit. 13. p. 815. Mantiss. p. 135. n. 40.

(*F. fimbriatus. Gmel. hist. fucor. p. 200. t. 29. f. 1. sed absque pinnis ad basin caulis.——Gunner. act.*

Nidros. 4. t. 8. f. 1. Oeder. Dan. t. 417.

Eatable Fucus. *Anglis.*

Badderlocks. *Scotis.*

It is found both on the eastern and western coasts of *Scotland*. It was observed above a century and half ago by Mr. *Cargill*, near *Aberdeen*; and we gathered it at *Ailsa Craig*, on the western shore, and at the island of *Gigha*. Mr. *Yalden* observ'd it also in *Basse* island in the *Forth*. IX.

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This Fucus is commonly about four feet long, and seven or eight inches wide, but is sometimes found three yards or more in length, and a foot in width. Small specimens are not above a cubit long, and two inches broad. The substance is thin, membranaceous, and pellucid; the color green or olive.

The root consists of tough, cartilaginous fibres. The stalk is about six inches long, and half an inch wide, nearly square, and pinnated in the middle, between the root and origin of the leaf, with ten or a dozen pair of thick, cartilaginous, oval-obtuse, foliaceous ligaments, each about two inches long, and crowded together.

The leaf is of an oval-lanceolate or long elliptic form, simple and undivided, waved on the edges, and widely rib'd in the middle from bottom to top, the stalk running through its whole length, and standing out on both sides of the leaf.

The fructifications we have never seen; but they are probably similar to those of the next species.

This Fucus is eaten in the north both by men and cattle. Its proper season is in the month of *September*, when it is in greatest perfection.

The membranous part is rejected, and the stalk only is eaten. It is recommended in the disorder

order call'd a *Pica*, to strengthen the stomach and restore the appetite.

saccharinus F. fronde subsimplici ensiformi, stirpe tereti brevissima. *Lin. syst. nat. edit. 13. p. 815. Sp. pl. 1630.*

(*Reaumur. act. Gall. 1712. pag. 29. tab. 3. f. 4.*

Gmel. hist. fucor. p. 194. t. 27. et var. t. 28.

bon. Oeder. Dan. t. 416. opt.

Sweet Fucus or Sea-belt. *Anglis.*

Upon the sea-coast very common. VIII.

The substance of this is cartilaginous and leathern; the stalk is round, and destitute of pinnated ligaments; and the leaf is quite ribless. These characters sufficiently distinguish it from the preceding, to which it is nearly related.

It consists of only one simple, linear, elliptic leaf, of a tawny green color; about five feet long, and three inches wide, in its full-grown state; but varies so exceedingly as to be found from a foot to four yards in length.

The ordinary length of the stalk is two inches, but it varies even to a foot. The root is composed of branched fibres, which adhere to the stones like claws.

In its fructify'd state the leaf is waved on the margins, and has generally two rows of wrinkled sinuses running parallel to each other, and length-

lengthways upon its surface, from the base almost to the summit. Sometimes there is only a single row extended up the middle of the leaf. But in either case these sinuses are full of a prolific mucus, containing many naked grains or seeds without capsules.

The plant is often infested with the *Sertularia ciliata*. *Lin. syst. nat. p. 1316. Ellis. coral. pl. 20. N. 5. d, D.*; and with *Sertularia dichotoma*. *syst. nat. 1312. Ellis. cor. pl. 12. n. 18. a, A.*

We frequently observ'd fix'd to the rocks, and floating under the sea-water, what we apprehend to be junior plants of the foregoing.

β. The leaves were simple and ribless, from four inches to a foot in length, of a pale green color, waved on the margins; but what strikes the observer is, that their substance is quite pellucid and membranaceous, so thin and delicate, that a dry leaf laid in the palm of the hand is sensibly affected, and curls with the heat.

This we take to be the kind describ'd by *Baubine*, in his *Prodromus*, p. 154. n. 4. where he says it has a fibrous root, and a small stalk three inches long. But *Linnaeus* quotes this plant of *Baubine* as a synonym of his *ULVA latissima*. *Sp. pl. 1639. n. 4.* May not therefore the plant

plant just described be the *ULVA latissima?*
Lin.

The inhabitants of *Iceland* make a kind of pot-
 tage with this *Fucus*, boiling it in milk, and
 eating it with a spoon.

They also soak it in fresh water, dry it in the sun,
 and then lay it up in wooden vessels, where in
 a short time it is covered with a white efflores-
 cence of sea-salt, which has a sweet taste like
 sugar. This they eat with butter; but if taken
 in too great a quantity, the salt is apt to irri-
 tate the bowels, and bring on a purging.

Their cattle feed and get fat upon this plant,
 both in its recent and dry state, but their flesh
 acquires a bad flavor.

It is sometimes eaten by the common people on
 the coast of *England*, being boil'd as a pot-
 herb.

sanguineus *F. frondibus membranaceis ovato-oblongis inte-*
 24. *gerrimis petiolatis, caule tereti ramoso. Syst. nat.*
edit. 13. p. 815. Mantiss. 136. (Moris. hist. Ox.
p. 645. sect. 15. t. 8. f. 6. Gmel. hist. fucor.
p. 185. t. 24. f. 2. opt. Oeder. Dan. t. 349:
bona.)

Dock-leav'd *Fucus. Anglis.*

Upon the sea-shores not unfrequent.

We observ'd it upon the coast of *Bute* and *Jona*, in great plenty, &c. VIII.

This is a most elegant species, of a bright-red or purple color, and thin, membranaceous, pellucid substance.

The stalk is short, roundish, and branched. The leaves are of an oval oblong form, intire, but waved on the edges; from six to twelve inches long, and from one to three inches wide; ribb'd in the middle throughout; the rib pin-nated with opposite or alternate nerves.

The fructifications we have never yet observ'd.

Oeder has drawn them like small, oval, pedunculated vesicles, growing in a spike out of the footstalk, at the base of the leaf.

rubens. 25. *F. frondibus membranaceis oblongis undulatis sinuatis, stirpe tereti ramosa. Syst. nat. edit. 13. p. 816. Sp. pl. 1630. n. 27. (Mart. cent. 32. t. 32. FUCUS crenatus. Gmel. hist. fucor. p. 184. t. 24. f. 1. Oeder. Dan. t. 652. bon.)*

Red Oak-leav'd ferrated Fucus. *Anglis.*

Upon the shores of *Jona*, and other places, plentifully. VIII.

The color of this is red; the substance membranaceous, very thin and delicate; the whole length from four to six inches.

The stalk is short, round, and branched. The leaves

leaves are of an oval form, at a medium about two inches long, and one wide, waved on the margins, and either sinuated or largely dented; the dents all finely ferrated, or rather ciliated with a kind of fringe. They sometimes grow opposite to each other upon the stalk, and sometimes alternate, and are ribb'd in the middle throughout, the rib pinnated with opposite nerves.

The leaves are often proliferous, their wide dents shooting out into other leaves, the lateral nerves of the parent serving for the middle ribs of the offspring.

The stalk between the primary leaves is frequently beset with small rudiments of junior leaves.

The fructifications are those fine *Cilia* above-mentioned, on the edges of the leaves; for with the aid of the microscope, the seeds are evidently discern'd within them.

ciliatus 26. F. frondibus membranaceis lanceolatis proliferis ciliatis. *Syst. nat. edit.* 13. p. 815. *Mantiss.* p. 136. (FUCUS *ligulatus*. Gmel. *hist. fucor.* p. 178. t. 21. f. 3. *optima*. Et ejus varietas dicta, FUCUS *holosetaceus*. Gmel. *fucor.* p. 177. t. 21. f. 2. *bona*. Aliæ figuræ sunt dubiæ, ut FUCUS *caulescens*. Gmel. 173. t. 20. f. 2. a Linnæo citata

pro

pro hac specie, quæ verò speciminibus nostris non accordat, neque ea Oeder. Dan. t. 353.)

Ciliated or ligulated Fucus. *Anglis.*

On the shores of *Jona* and other places, but not common. VIII.

The color of this is red, the substance membranaceous and pellucid, without rib or nerve; the ordinary height of the whole plant about four or five inches.

It is variable in its appearance, according to the different stages of growth.

The leaf when simple is elliptic and lanceolate; about two inches long, and a quarter of an inch wide, finely dented or ciliated on the edges.

When further advanced, it is produced to the length of four or five inches, sometimes without any increase in breadth, at other times near an inch wide. In this state it becomes branched, or more properly proliferous, as narrow, lanceolate, distichous, leaf-like ligaments shoot out of the edges, in alternate or nearly pinnated order, all dented on the margins, like the primary leaf, with numerous *cilia* of very unequal lengths. Sometimes also the very disc or surface of the leaf is beset with short *cilia* or little innocent spines, which is the variety call'd by *Gmelin* FUCUS *holosetaceus*, above cited.

P p p

We

We have never yet observed the fructifications; but from analogy we conclude them to be placed in the *cilia*, on the edges of the leaf and ligaments.

β. A variety of this sometimes occurs with a branched stalk, and linear lanceolate leaves, two or three inches long, and not more than about one-tenth of an inch wide, pinnated with lanceolate ligaments like the preceding, but less ciliated, or with fewer dents. The principal difference therefore consists in the narrowness of the leaves.

This Fucus is eaten by the *Scotch* and *Irish*, promiscuously with the *F. palmatus* or *Dulse*.

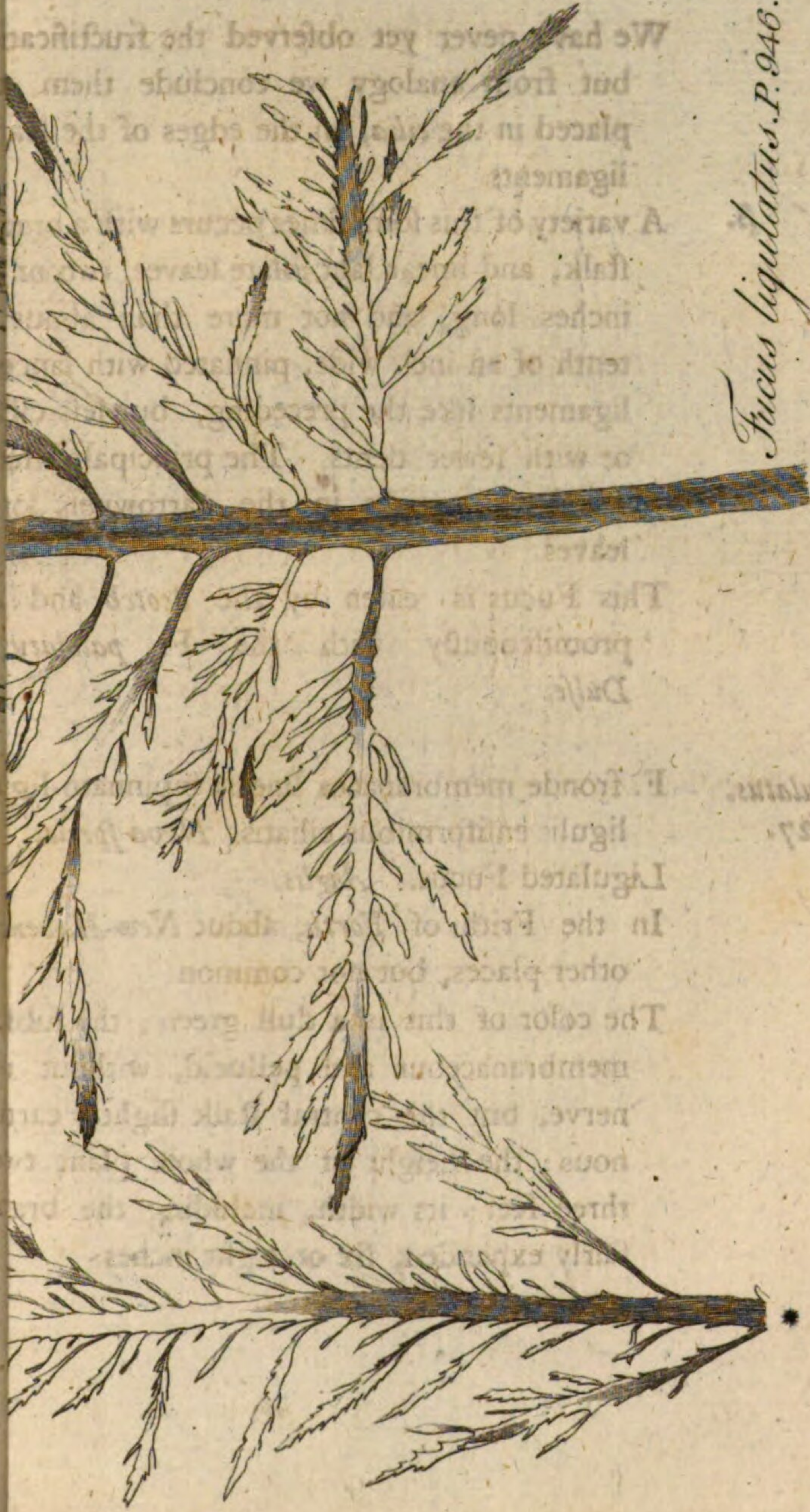
ligulatus. F. fronde membranacea lineari bipinnato-ligulata,
27. ligulis ensiformibus ciliatis. *Nova species.*

Ligulated Fucus. *Anglis.*

In the Frith of *Forth*, about *New-Haven*, and other places, but not common.

The color of this is a dull green; the substance membranaceous and pellucid, without rib or nerve, but the central stalk slightly cartilaginous; the height of the whole plant two or three feet; its width, including the branches fairly expanded, six or eight inches.

The



Fucus ligulatus. P. 946.

Sowerby del.

P. A. Marshall sculp.

The middle stalk is flat and linear, about one-fifth of an inch wide, and continued throughout from the base to the summit of the plant, ending acutely.

This stalk is doubly proliferous; for out of the edges, in a distichous and oppositely pinnated order, grow narrow, sword-shaped, leafy ligaments, from three to eight inches long, which are again pinnated with shorter but similar ligaments, ciliated on the margins with the rudiments of others, not much bigger than hairs.

The primary ligaments are for the most part gradually shortened towards the summit of the stalk, so as at last to leave it simply pinnated, and thereby give to the plant a nearly conical form.

The fructifications we have never observ'd, but suppose they must reside in the minute *cilia* or marginal ligaments.

laciniatus. F. frondibus ramosis membranaceis, ramis dilatatis palmatis, marginibus dentato-crispatis. F. *laciniatus.* Hudf. Flor. Angl. p. 475. n. 44. An FUCUS *vittatus.* Lin. Syst. nat. edit. 13. p. 816? (Gmel. hist. fucor. p. 176. t. 21. f. 1. bona quoad figuram, non synonyma.)

28.

Wide-spread jagged Fucus. *Anglis.*

Upon the coast of *Jona* plentifully, &c. VIII.

The color of this is a bright red, or purple. The substance a thin, delicate, pellucid membrane, without rib or nerve; sensibly affected by a warm hand. The height of the leaves from two to five inches, their breadth, including the segments properly expanded, from three to seven inches.

The leaf widens suddenly from the base, and branches out so as to form in the outline a large segment of a circle. The branches are palmated, often dichotomous; the *alæ* of the ramifications oval, and the extreme segments obtuse.

In a state of fructification, the margins of the leaf and branches are elegantly fringed with short, minute, crisped, and lacerated leaves, crowded close together, and appearing to the naked eye like fine short dents. Some of these assume a globular form, in which, with the help of the microscope, we plainly discovered red grains or seeds.

*endiviæ fo-
lius 29.*

F. fronde membranacea laciniata, laciniis dilatatis undulatis, marginibus crispis tuberculato-punctatis.—*Nova species.*

Endive-leav'd Fucus. *Anglis.*

In the Frith of *Forth*, and on the coast of *Jona*.
VIII.

The

The color of this is a bright red, or purple. The substance a thin, delicate, pellucid membrane, without rib or nerve; sensibly affected by a warm hand. The height of the leaves from two to five inches, their breadth, including the segments properly expanded, from three to seven inches.

The leaf widens suddenly from the base, and branches out as to form in the outline a large segment of a circle. The branches are paired, often dichotomous; the axis of the ramifications oval, and the extreme segments of the leaf.

In a state of multiplication, the margins of the leaf and branches are elegantly fringed with short, minute, crisp, and lacinated leaves, crowded close together, and appearing to the naked eye like fine horse hairs. Some of these assume a globular form, in which, with the help of the microscope, we plainly discovered red grains or seeds.

Indiv. fo- F. fronds membranaceae laciniatae, laciniae dilatatae
lin. 20. undulatae, marginibus crispis subciliatis punctatis. — Nova species.

Endive-leaved Fucus. Angl.

In the Frith of Forth, and on the coast of York.

VIII.

The

CRYPTOGAMIA ALGAE

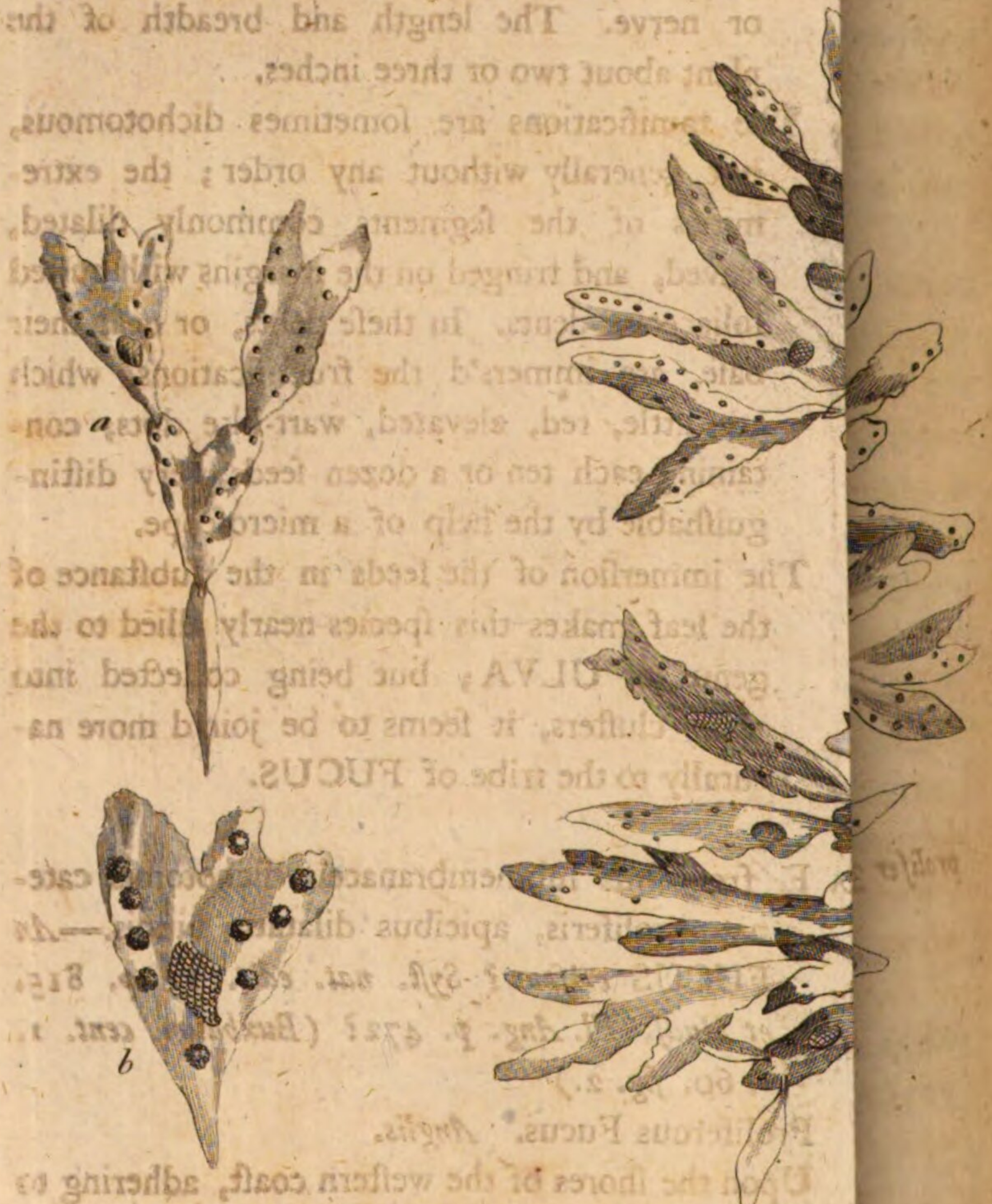
The color of this is pale red. The substance extremely thin and membranaceous, without rib or nerve. The length and breadth of the plant about two or three inches.

The ramifications are sometimes dichotomous, sometimes pinnately without any order; the extreme of the segments commonly dilated, and fringed on the margins with small, rounded, or lobed, in these or other parts, which are sometimes elevated, wart-like, conical, each ten or a dozen seeds, very distinguishable by the help of a microscope. The immolation of the seeds in the substance of the leaf makes this species nearly allied to the genus *ULVA*, but being collected into clusters, it seems to be joined more nearly to the tribe of *FUCUS*.

Fucus is a membranaceous, green, calcareous, spicuous, dichotomous, branching, fringed with small, rounded, or lobed, in these or other parts, which are sometimes elevated, wart-like, conical, each ten or a dozen seeds, very distinguishable by the help of a microscope.

Upon the shores of the western coast, adhering to rocks and stones. Vill.

The P P P



The color of this is pale red. The substance extremely thin and membranaceous, without rib or nerve. The length and breadth of the plant about two or three inches.

The ramifications are sometimes dichotomous, but generally without any order; the extremities of the segments commonly dilated, waved, and fringed on the margins with curled foliaceous dents. In these dents, or near their base, are immers'd the fructifications, which are little, red, elevated, wart-like dots, containing each ten or a dozen seeds, very distinguishable by the help of a microscope.

The immersion of the seeds in the substance of the leaf makes this species nearly allied to the genus of *ULVA*; but being collected into warty clusters, it seems to be join'd more naturally to the tribe of *FUCUS*.

prolifer 30. *F. frondibus submembranaceis dichotomis catenato-proliferis, apicibus dilatatis bifidis.*—*An FUCUS crispus?* *Syst. nat. edit. 13. p. 815. et Huds. Fl. Ang. p. 472? (Buxbaum. cent. 1. t. 60. fig. 2.)*

Proliferous *Fucus*. *Anglis.*

Upon the shores of the western coast, adhering to shells and stones. VIII.

The color is red. The substance membranaceous, but tough, and somewhat cartilaginous, without rib or nerve, though thicker in the middle than at the edges. The whole length of the plant is about four or five inches, the breadth of each leaf about a quarter of an inch.

The growth of this *Fucus*, when examin'd with attention, appears to be extremely singular and wonderful.

It takes its origin either from a simple, intire, narrow, elliptic leaf, about an inch and a half long; or from a dilated forked one, of the same length. Near the extremity of the elliptic leaf, or the points of the forked one (but out of the surface, and not the edge) arises one or more elliptic or forked leaf, which produces other similar ones, in the same manner, near the summits, and so on continually one or more leaves from near the ends of each other, in a proliferous and dichotomous order, to the top of the plant; which in the manner of its growth resembles in a good measure the *CACTUS opuntia* Lin. or *Flat-leav'd Indian Fig*.

Sometimes two or three leaves or more grow out of the middle of the disc of another leaf, but this is not the common order of their growth.

The fructifications are red, spherical, rough warts,
less

less than the smallest pin's head, scattered without order on the surface of the leaves.

These warts, when highly magnified, appear to be the curled rudiments of young leaves; which in due time either drop off and form new plants, or continue on and germinate upon the parent.

The plant is very much infested with the FLUSTRA *pilosa*. *Lin. Syst. nat. p. 1301*; the MADREPORA *verrucaria*, *p. 1272*; and other Corallines, which make it appear as if covered with white scabs.

alatus 31. *F. frondibus membranaceis subdichotomis costatis, laciniis alternis decurrentibus bifidis. Lin. Syst. nat. edit. 13. p. 816. Mantiss. p. 135. n. 42. Hudf. Fl. Ang. p. 473. n. 33. (Gmel. hist. fucor. p. 187. t. 25. f. 1. bona, et ejus varietates f. 2, et 3. Oed. Dan. t. 352. opt.)*

Winged Fucus. *Anglis.*

Upon the sea rocks frequent, in basons of water left by the recess of the tides.

The color is a bright red, or pale purple; the substance membranaceous, thin, and transparent.

The height three or four inches; and the breadth, when fully expanded, rather more.

The stalk is flat, about a line in width, and very much branched. The branches grow alternate,

nate, dichotomous towards the summits, and wing'd throughout, with a linear distichous membrane from bottom to top.

We have never yet discovered any fructifications, but have frequently observed young leaves shooting from the angles and summits of the branches.

dentatus F. frondibus membranaceis enerviis alternatim pinnatifidis; sinubus obtusis, laciniis apice erosis. *Lin. Syst. nat. edit. 13. p. 816. Mantiss. p. 135. (Moris. hist. Ox. p. 646. sect. 15. t. 8. f. 5. ordinis superioris, optima. Oeder. Dan. t. 354. fig. bona varietatis majoris. Gmel. hist. fucor. p. 125. t. 10. f. 1 ? secundum Lin. sed fig. vix concordat. sed FUCUS corymbiferus. Gmel. hist. fucor. p. 124, t. 9. bene exprimit, si quidem fructificatio convenit.*

Dented Fucus. *Anglis.*

In the Frith of *Forth*, and upon the coasts of *Jona*, plentifully.

The color is dark red. The substance membranaceous, thin, and transparent, without rib or nerve. The height four or five inches; the width, when the branches are fairly expanded, about six or seven inches.

The plant is very much branched. The branches flat, linear, about one-eighth of an inch wide, doubly

doubly pinnatifid, and alternate. The angles of the segments are obtuse, and their summits truncated and acutely dented.

It varies sometimes, with branches or segments twice the width of the foregoing.

We have never seen the fructifications; but if *Gmelin's* figure (*tab. 9. above cited*) refers to this plant, (and we believe it does) then the fructifications appear upon the summits of the dents of the ultimate segments, in the form of small, black, deciduous globules.

pinnatifidus F. frondibus cartilagineis planis ramosis, ramis
33. dentato-pinnatifidis, dentibus obtusis callofis.

FUCUS *pinnatifidus*. *Huds. Fl. Angl. p. 473. n.*
32. (*Gmel. hist. fucor. p. 156. t. 16. f. 3. bona.*)

Jagged Fucus. *Anglis.*

Pepper Dulse. *Scotis.*

Upon the sea rocks which are covered by the tides frequent, both on the eastern and western coasts, as about *Aberdeen*, and on the shores of *Bute* plentifully, &c. VIII.

It is of a yellow olive color, often tinged with red. The substance is cartilaginous, but yet tender and transparent. The height about two or three inches.

The stalk is flat, without rib or nerve, branched almost from the base. The branches plain, about

about one-tenth of an inch wide, alternate, gradually shortened upwards, and pinnatifid, the segments consisting of obtuse callous dents.

The plant varies extremely in the narrowness or width of the branches, even from a line to a quarter of an inch; as also in the distance and figure of the dents, being sometimes plain and thinly set, at other times cylindrical, and crowded together at the summit into a short, oval, digitated bunch or cluster. It varies also in color, being not only yellow or olive, but sometimes dark red or purple.

The fructifications are small red seeds, visible by a microscope, placed in the substance of the cylindrical dents, and in a circular form near their summits.

This Fucus has a hot taste in the mouth, and is therefore called *Pepper Dulse* by the people in *Scotland*; who frequently eat it as a salad, in the same manner as they do the *F. palmatus*, n. 19.

filicinus 34. *F. frondibus cartilagineis compressis supra-decompositis pinnatis, laciniis obtusis?* *Huds. Fl. Angl. p. 473. n. 36.* (*FUCUS Osmunda. Gmel. hist. fucor. p. 155. t. 16. f. 2.*)

Fern-leav'd Fucus. *Anglis.*

This

This is found in the same places, mix'd with the foregoing.

The color and substance is the same as in the preceding.

The leaves are flat and doubly pinnatifid; the segments about a quarter of an inch wide; the dents flat, obtuse, and callous on the margins.

It is probably no more than a variety of the last; but though the plant is generally larger, and the segments wider, it is somewhat remarkable that we never yet could discover its seeds; but the dents always continue flat, without any other signs of fructification than a callosity on their margins. Possibly this *Fucus* may be dioecious, and this the male variety.

plumosus
35.

F. frondibus cartilagineis lanceolatis bipinnatis plumosis, caule filiformi compresso ramoso. Syst. nat. edit. 13. p. 816. Hudf. Ang. p. 473. n. 35. (Raii synopsis. p. 38. n. 2. tab. 2. f. 5. parva. Oed. Dan. t. 350. opt.)

Feather'd *Fucus*. *Anglis.*

Upon the coast of *Jona* abundantly, and on other shores not uncommon. VIII.

The color of this elegant species is a deep red, or purple. The substance cartilaginous, but yet very thin and delicate. The height of fair specimens

specimens five or six inches. It is found however much larger in *North Britain* than in the *South*; for on the *English* shores it seldom exceeds two or three inches.

The stalk is filiform, compress'd, opaque, and branched. The branches grow without order, of a long elliptic figure, doubly and often trebly pinnated, being compounded of fine, opposite, linear pinnules, affix'd to a straight central rib, so as to resemble a most delicate feather.

The fructifications are extremely minute oval capsules, supported on peduncles, and bursting into about four segments or *cilia*, something like the *Bryums*. These capsules are red, and placed between the second order of pinnules on the branches; appearing only like dots to the naked eye.

nereideus

36.

F. fronde cartilaginea filiformi-compressa ramosa, ramulis setaceo-pinnatis. *Solander*.—(FUCUS *sericius*. *Gmel. hist. fucor.* p. 149. t. 15. f. 3. et FUCUS *spinosus*. p. 161. t. 18. f. 3. quoad fig.)

Bristly-edged Fucus. *Anglis*.

In the Frith of *Forth* and other places, but not common.

The color is a deep red, or purple. The substance cartilaginous, somewhat stiff and elastic when dry. The height about two or three inches.

The

The stalk is filiform, compress'd, and branched; the branches of the same size with the stalk, lanceolate, alternate, sometimes opposite, simply and often doubly pinnated; the pinnules alternate, sometimes opposite, setaceous, thinly set, and slightly curving upward.

The points of these setaceous pinnules are frequently dilated, and in them we believe the fructifications may in proper season be found.

plocamium 37. F. fronde membranaceo-cartilaginea ramosissima, ramulis alternatim pectinatis, fructificationibus globosis lateralibus.—*Raii synopsis*. p. 37. n. 1. *FUCUS cartilagineus*. *Huds. Ang.* p. 473. sed non *Linnaei*, nec a *Linnaeo* descriptus videtur: *Muscus marinus Clus. hist.* p. CCL. fig. *mediocris*. *FUCUS plocamium*. *Gmel. hist. fucor.* p. 153. t. 16. f. 1. opt.)

Pectinated Fucus. *Anglis*.

Upon the sea rocks, in basons of water, left by the recess of the tides, frequent. VIII.

Its natural color is a most beautiful bright red or purple, but is often variegated with white or yellow. Its substance is cartilaginous, but extremely thin, delicate, and transparent. Its height commonly about three or four inches.

The stalk is compress'd, about half a line in diameter, erect, but waved in its growth, and divided

divided almost from the base into many widely expanded branches. These *primary* branches are very long, alternate, exactly like the stalk, and subdivided into alternate *secondary* branches, which are again frequently compounded in like manner, and these divisions decorated with subulated teeth growing in alternate rows, curiously pectinated or finely tooth'd on the upper side like a comb, the smallest of these teeth scarcely visible to the naked eye.

The fructifications are minute spherical capsules, or smooth dark-red globules, scatter'd without order on the sides of the branches; generally sessile, but some few of them supported on short peduncles.

This Fucus, on account of its elegant colors and fine divisions is the species most admired by the ladies who are fond of pictures, and mimic landscapes, compos'd of marine vegetables.

vermicularis 38. F. caule filiformi ramoso, ramis dichotomis, foliis oblongis teretibus petiolatis.—(Reaum. *act. Gall.* 1718. p. 40. fig. 8. e. bona. FUCUS *vermicularis*. Gmel. *hist. fucor.* p. 162. t. 18. f. 4. *opt.*)

Stonecrop Fucus. *Anglis.*

In basons of water upon the sea-rocks, but not common. We gathered it upon the rocks of the *Little Isles of Jura*. VII.

The substance is cartilaginous, but yet so as to be tender, and somewhat gelatinous. The color is a pale or whitish green, the leaves being sometimes slightly tinged with red. The height two or three inches.

The stalk is filiform, cylindrical, and branched; the branches alternate, and dichotomous.

The leaves are oblong, cylindrical, succulent, about a line in length, and grow on short footstalks, one above another, without order, all round the branches, but chiefly near their summits. To compare small things with great, they bear a strong resemblance to the leaves of the *SEDUM album* Lin. or *White Stonecrop*; but with this difference, that a few of the leaves of the *FUCUS* are sometimes found bifid, and frequently at their base are seen shorter and smaller leaves, which grow in clusters, and appear only like round grains.

The fructifications are minute red seeds, to be discerned by the microscope in the substance of the leaves.

articulatus. F. fronde articulata ramosissima, articulis ovato-cylindricis tubulosis, ramis oppositis et verticillatis.—*ULVA articulata*. Hudf. Ang. p. 476. (Raii synopsis. p. 34. n. 9. sed a Linnæo non descriptus videtur? (Moris. hist. Ox. III. p. 646. sect. 15. t. 8. f. 14. bona.

Jointed

Jointed Fucus. *Anglis.*

Upon the sea-rocks about low-water mark not unfrequent. We observed it on the coast of *Jura, Oransa, Canay, Skye, &c.* VIII.

The color is red or pale purple. The substance membranaceous; the joints inflated. The height from one to two inches; rarely three inches.

The whole plant, with all its branches, is jointed throughout. The joints are hollow, cylindrical, but contracted at each end, and united in a series. The branches grow generally opposite, but often three or four in a whirl; their extremities or subdivisions commonly dichotomous.

The plant, when in fructification, has small joints growing in whirls at the heads of the larger ones. In these joints, and in those at the summits of the branches, clusters of dark red seeds are visibly imbedded.

This plant serves to shew how nearly related are the three *Genera* of FUCUUS, ULA, and CONFERVA. If the seeds had no certain lodgments, but were vaguely dispers'd in any part of the substance of the plant indifferently, it then would properly be rank'd under the *Genus* of ULVA. Its jointed structure demonstrates its great affinity to the family of CONFERVA;

FERVA; but its fructifications are more nearly allied to that of FUCUS; and in this *Genus* we have thought proper to range it, under the sanction of the celebrated Dr. SOLANDER, and the lately deceas'd ingenious and much-lamented ELLIS.

repens 40. F. frondibus cæspitosis repentibus ramosis articulatis, articulis oblongis planis.—*A Linnæo non descriptus.* (*Dillen. musc.* 50. t. 10. f. 9. A. B. C. D. *bon.*)

Little creeping cluster'd Fucus. *Anglis.*

It grows upon the sea-rocks, which are wash'd by the waves, in many places, particularly near *Musselburgh, &c.* VIII.

The substance is somewhat cartilaginous, but tender and elastic. The color a deep purple or violet; the summits of the branches often ting'd with a dull green. The height only about half an inch.

It creeps upon the rocks so as to form clusters or patches, consisting of many extremely fine prostrate runners entangled together, and emitting from their sides small acute ligaments or creeping radicles like claws. From these runners are produced short branched shoots. The branches without order, slender at the base, but dilated upwards, and jointed. The joints

Q q q

oval

oval or oblong, not tubular as in the preceding, but flat, like the jointed leaves of the CACTUS *opuntia*, Lin. and frequently producing forked and tendril-like ligaments from their summits, particularly at the tops of the branches.

The seeds may be discovered, by the help of a microscope, to be lodged in great numbers in the substance of some of the extreme joints, appearing like grains of a fine purple powder.

This species is nearly related to the preceding, but quite distinct. It seems also to be the link which unites together the three Genera of FUCUS, ULVA, and CONFERVA.

verticillatus 41. F. frondibus tubulosis subarticulatis ramosis, ramis verticillatis subulatis setaceo-ligulatis.—

Nova species. (Vid. fig. nost.)

Verticillate Fucus. *Anglis.*

We found it sparingly upon the rocks of the *Little Isles of Jura.* VII.

This is nearly allied to the 39th, but is certainly a distinct species.

The color of it is a pale or whitish green. The substance membranaceous. The height about five inches.

Several stalks arise from one root, each of which is about the size of a small goose-quill, tubular, nearly equal, or so obscurely jointed as to be almost

Fucus verticillatus. P. 962.



almost cylindrical. About these stalks, at intervals of one quarter of an inch, grow in whirls three, four, or five subulate branches, an inch or more long, but gradually shortened in each whirl towards the summit of the stalk. These branches are beset with setaceous ligaments, growing alternate, or without order.

The fructifications are small red seeds, visible with a microscope in the ligaments and summits of the branches.

filum 42. F. fronde filiformi simplici subfragili opaca. *Lin. Syst. nat. edit.* 13. p. 815. *Sp. pl.* 1631. (Boccon. *mus.* 1. p. 271. t. 7. f. 9. Petiver. *Gaz.* t. 91. f. 5. opt.)

Thread Fucus, or Sea Laces. *Anglis.*

Upon the sea rocks, and waving under the water like long strings, frequent on many parts of the coast.

The substance of this is opaque and cartilaginous, but not difficult to be broken. The color when recent a dull olive-green, when dry, fuscous, or nearly black; and, when expos'd for some time on the shores to the sun and air, it becomes yellow, straw-color'd, or white.

It consists only of a simple, unbranched, naked, cylindrical stalk, three or four yards long, more or less; from the size of a large fiddle-string to

Q q q 2

that

that of a thick whip-cord; smallest at the base and summit; smooth on the outside, full of mucus within; often twisted, and always intercepted by numerous transverse diaphragms, visible when the plant is held between the eye and the light.

The fructifications have not yet been discovered; but from the transverse *septa* in its structure, it is reasonable to suppose this plant to belong rather to the genus of *CONFERVA* than that of *FUCUS*.

The stalks skinn'd when half dry, and twisted, acquire so considerable a degree of strength and toughness, that we were inform'd the *Highlanders* sometimes used them for the same intentions as *Indian-grass*.

pygmæus F. fronde cartilaginea compressa apice dilatata
43. palmata, fructificationibus terminalibus subrotundis apice perforatis.—*Nova species.* (Vid. *fig. nost.*)

Pigmy Fucus. *Anglis.*

The rocks of the *Little Isles* of *Jura*, which are wash'd by the tides, are some of them rendered almost black with this Fucus, which covers them as *LICHENS* do the inland rocks and trunks of trees. We observ'd it also on the coast of *Jona*, and in the Frith of *Forth*, and several other places. VIII.

The

Fucus pygmaeus. P. 964.



Fucus Endiviacifolius. P. 948.

The substance is cartilaginous, the color apparently black, but held between the eye and the light it appears to be a dark-green. The height of the whole plant seldom exceeds a quarter of an inch.

This Fucus, though so very diminutive, has all the characters, and is as perfect in its kind as the largest species.

The leaves are erect, compress'd, greatly branch'd, and dichotomous, but generally widened towards the top, and either palmated or branched like stags horns; the segments numerous, crowded, and obtuse at the extremities.

The fructifications are of the same color and substance as the leaves; of nearly a spherical figure, with a hole or cavity at top; and grow upon the summits of the segments.

The cavity at the top of the fructifications is a proof how nearly this species of Fucus is related to the *scutellated Lichens*. Nature disdains to be limited by the systematic rules of human invention. She never makes any sudden starts from one class or genus to another, but is regularly progressive in all her works, uniting the various links in the chain of beings by insensible connexions.

Obs. It may not be amiss in this place to apprise the young student of Nature, that he may fre-

quently find, upon the coast of the *Hebrides*, and other shores, several marine substances which bear a very great external resemblance to some of the plants we have been describing; such as many species of branched sponges, particularly the *SPONGIA dichotoma*, *Lin.* and others not describ'd; some of the *ALCYONIA*, *FLUSTRÆ*, &c. which, being generally received into the class of *Zoophytes*, did not properly belong to our subject. We have therefore purposely omitted them; and must refer those curious persons, who would wish to investigate them, to their proper place in the *Systema naturæ Lin.* giving them only this short direction, that such substances may in general be known not to belong to the vegetable kind, by their having either a downy or spongy texture, or by their yielding a strong smell, like burnt oyster-shells, when put into the fire.

ULVA. *Gen. pl.* 1206.

Frustrificationes in membrana diaphana.

pavonia 1. *ULVA* plana reniformis sessilis decussatim striata.
Syst. nat. edit. 13. p. 817. *FUCUS pavonius*.
Sp. pl. p. 1630. (*Moris. hist. Ox.* III. p. 645.
sect. 15. t. 8. f. 7. *ordinis superioris, bona.* *Ellis.*
cor. p. 88. t. 33. *fig. C. opt.*)

Striated

Striated Laver, or Turkey-feather. *Anglis.*

Upon the sea-rocks near *Aberdeen*, discover'd above a century past by D. *Cargill*. VII.

Several plane thin leaves arise from the same root, each of them fan-shap'd, commonly about two inches in length and breadth; of a dull green color, cover'd with a white pellicle, transversely streak'd with several brown concentric arcs, at the distance of one-tenth of an inch from each other, and obscurely reticulated by other straight longitudinal lines.

The seeds are placed in the concentric arcs, and, when ripe, burst the white pellicle and fall out.

umbilicalis ULVA plana orbicularis sessilis peltata coriacea.
2. *Lin. syst. nat. edit. 13, p. 817.* ULVA fronde dilatata subsinuata, centro radicata. *Sp. pl. p. 1633. (Dillen. musc. p. 45. t. 8. f. 3.)*

Navel Laver. *Anglis.*

Sloke or Slake. *Scotis.*

Upon the sea rocks frequent, and often upon low shores, growing single.

This is a wide membranaceous leaf, of a dark dull purple color, expanded flat; for the most part in a circular form, variously sinuated on the edges, often perforated in the surface, and generally fix'd to the rocks by a central root.

The substance of it is smooth and shining, and a little tough, but not difficult to be torn. The breadth from three inches to a foot.—It often varies into a long riband-like form.

The inhabitants of the Western isles gather it in the month of *March*, and after pounding and stewing it with a little water, eat it with pepper, vinegar, and butter. Others stew it with leeks or onions.

In *England* it is generally pickled with salt, and preserved in jars; and when brought to table is stew'd, and eaten with oil and lemon-juice.

intestinalis ULVA tubulosa simplex. *Syst. nat. edit.* 13. p. 817. *Sp. pl.* 1632. (*Dillen. musc.* p. 47. t. 9. f. 7.)

Gut Laver. Sea Chitterling. *Anglis.*

In ditches and stagnant waters by the sea-side, and often cast up upon the shores. It is also found sometimes in fresh-water rivers and ponds.

This is a tubular skin or membrane, of a yellowish or a green color, wrinkled and sinuated like a gut or chitterling; generally simple or unbranch'd; of various sizes, from that of a crow's quill to the thickness of a man's thumb, and from six inches to a yard in length.

It

It often swims upon the surface of the water in clusters like a scum, and looks bloated as if in a state of fermentation. Sometimes it is seen under the water in an erect position, fix'd to the bottom.

compressa 4. *ULVA tubulosa ramosa compressa. Syst. nat. edit. 13. p. 817. Sp. pl. 1632. (Dillen. musc. 48. t. 9. f. 8. A. B. C. D. E. et tab. 10. f. 8. F. G. bonæ. Læfel. Fl. Pruss. p. 172. n. 51. Petiver. Gaz. t. 9. f. 6.)*

Thread and Tape Laver. *Anglis.*

Upon rocks and stones on the sea-shores very common, as also upon boards and timber that is wash'd by the tides, in dock-yards and other places. *Linnaeus* says it is sometimes found upon thatch'd houses, but such, we presume he means, as are within the spray of the sea.

This species varies extremely both in size and figure. Its most general appearance is as follows:—Many narrow, very thin, membranaceous, simple, grass-like leaves grow in a cluster from the same root, which appear flat and compress'd, but if properly examin'd will be found to be tubular, or to consist of a double membrane. These leaves have a smooth and equal surface, not sinuated and wrinkled like the preceding; of various sizes, from that of fine threads

threads or hairs to a piece of tape a quarter of an inch in diameter, and from an inch to a foot in length ; always of a green color, unless blanch'd by the sun and air.

α. It varies, first, with leaves branched either in alternate or dichotomous order. This generally happens in the finest or capillary kind.

β. Sometimes the leaves are contracted at equal distances, so as to appear jointed.

γ. Sometimes they are both jointed and branched.

δ. Often the largest are filiform at the base, and dilated upwards.

ε. And, lastly, they are sometimes proliferous. *Dillenius* has figur'd them in all these states.

laetluca 5. *ULVA* palmata prolifera membranacea, ramentis inferne angustatis. *Lin. syst. nat. p. 817. Sp. pl. 1632. n. 5. (Ger. emac. 1566. n. 2. Dillen. musc. 42. t. 8. f. 1.)*

Lettuce-Laver, or Oyster-Green. *Anglis.*

Green Sloke. *Scotis.*

In the sea frequent, growing upon stones and shells, &c.

This consists only of a very thin, green, pellucid membrane, of no certain size or figure, but found from two inches to a foot or more in length, and from one to five inches in breadth ; either plaited, undulated, sinuated, or variously laciniated

laciniated on the margins, so as to resemble, in some measure, a Lettuce-leaf; growing either single; or in clusters, erect, or reclining on each other.

- β. A variety of this sometimes occurs in fresh-water ditches and marshes, of a still thinner substance than the preceding; so tender and slippery as to be held in the hand with difficulty; of the same color with the foregoing, but not so large. This rises to the surface of the water in the spring, turns to a yellow-green color, and becomes bloated with air-bubbles, as if in a state of fermentation. See its figure in *Dillen. musc.* 43. t. 8. f. 2.

Fresh-water Laver. *Anglis.*

- γ. The *ULVA latissima*. *Lin. Sp. pl.* 1632. n. 4. is asserted by *Gmelin*, in his *Hist. fucor.* p. 217. to be only a large variety of the *ULVA lactuca*, just described. Possibly it may be so; but may it not be the *FUCUS saccharinus*, var. β. described by us? which see above.

The Oyster-Green is eaten in the same manner as the *ULVA umbilicalis*, n. 2. both in *England* and *Scotland*, but the last of the two is generally preferr'd, where both are found.

The Islanders ascribe to it an anodyne virtue, and bind the leaves about the front and temples to

affuage the head-ach in fevers, and to procure sleep; but the use of it in these intentions is supported by no good authority.

crispa 6. ULVA tenera crispa terrestris.—*Raii synop. p. 64. n. 12. (Dillen. musc. 52. t. 10. f. 12. A. B. C. D.)*

Crisped Ground Laver. *Anglis.*

This is found lying upon the ground in shady places, at the foot of walls and houses. I. II.

It consists of extremely thin, sinuated, and curled green membranous leaves, wrapt together in a heap, very light, and lying loose upon the ground without visible roots.

cornuta 7. ULVA subrigida cornuta terrestris.—(*Dillen. musc. 52. t. 10. f. 13.*)

Horned Ground Laver. *Anglis.*

This is found lying flat upon the ground in a moist sandy soil. It was gather'd near *Leith* by *Mr. Yalden*. IV. V.

It is about an inch long, sometimes two or three; divided deeply, without order, into various acute horned segments; the edges turn'd inwards, otherwise a flat membrane. It is of a pale-green color, and substance somewhat rigid.

ULVA

linza 8. ULVA fronde oblonga bullata. *Lin. syst. nat. edit.*
13. p. 817. *Sp. pl.* 1633. (*Dillen. musc.* 46.
t. 9. f. 6. *bona.*)

Doubled Ribbon Laver. *Anglis.*

It is found upon the sea shores mix'd with the 5th species.

It consists of a green membrane five or six inches long, and about an inch wide, doubled together lengthways, so as to be join'd behind and open before; the edges curled and sinuated.

It is hardly distinct from the ULVA *lactuca*.

montana 9. ULVA plana coriacea terrestris sanguinea.—*Nova species.* (*Fig. nulla.*)

Mountain Laver. *Anglis.*

Mountain Dulse. *Scotis.*

Duilliosg-nam-beann. *Gaulis.*

It grows upon the ground amongst the grass and moss on the sides of the mountains in the isle of Skye, and in *Ross-shire* on the side of a mountain call'd *Cail-veg*, between *Loch-broom* and *Lead-beg*, on the western coast, and doubtless in many other such-like places. VIII.

Many leaves without visible roots lie together in irregular order, generally erect, and supported by each other. They are about two or three inches in height and breadth; flat, but of no regular figure; variously sinuated; of a coriaceous

ceous but yet friable substance, and a dark or blood-red color.

It smells like *Dulse* (*FUCUS palmatus*) and bears some resemblance to it, from whence it obtain'd its name.

The Highlanders wash it, and rub it between their hands into some water, so as to make a thin pulpy mixture, and with this they purge their calves.

laciniata

10.

ULVA frondibus planis purpureis, apice dilatatis laciniatis undulatis.—*Nova species.* (*Vid. fig. nost.*)

Red laciniated Laver. *Anglis.*

We gathered it upon the coast of *Jona*. VIII.

Several leaves arise from the same root, each of them narrow and filiform at the base, but suddenly dilated from thence to the top; deeply and variously laciniated, and waved or plaited on the edges; three or four inches long, about two inches over in the widest part; of an extremely thin membranaceous substance, and bright red or purple color.

The seeds are visible with the help of a microscope, and are very minute and numerous. They are lodged in various parts of the substance of the membrane, particularly near the edges, appearing like grains of a red powder sprinkled in rows near the margins, and generally



Laciniata. P. 974.

P. Mazell sculp.



Alva dichotoma. P. 975.

Sowerby del.

P. Huet sculp.

rally in spots or streaks upon the disc of the leaf.

This plant greatly resembles the *FUCUS lacinia-tus*, n. 28. above described ; but the fructifications are different.

dichotoma ULVA fronde plana dichotoma reticulata viridis.

11. —ULVA *dichotoma*? *Huds. Ang. p. 476.*

Green dichotomous Laver. *Anglis.*

In basons of water amongst the sea-rocks, about *Leith* and *New-Haven*, &c. VIII.

The leaf is flat, about three inches long, simple at the base, but greatly dilated upwards, and dichotomously branch'd; the branches about one-eighth or one-tenth of an inch wide, and bifid at the extremities.

The color is a pale green; the substance membranaceous, very thin and pellucid, and when examin'd with a microscope appears to be finely reticulated; the meshes nearly square, and running in longitudinal lines contiguous to each other.

The seeds are small and brown, and scattered throughout the whole substance of the leaf.

From the reticulated texture of the membrane, we at first imagin'd it might belong to the class of Zoophytes, and be rank'd in the genus of *Flustra. Lin.* but upon a more attentive examination

mination we thought fit to relinquish that opinion.

granulata ULVA globosa farcta viridis. *Syst. nat. edit.* 13.
12. p. 817. ULVA *sphærica aggregata*. *Sp. pl.*
1633. (*Dillen. musc.* 55. t. 10. f. 17.)

Bladder-headed Laver. *Anglis.*

On the perpendicular banks of rivers and lochs, in shady places, not unfrequent. V. and VIII.

This consists of many globular vesicles, generally of the size of hemp-seed, but sometimes as large as pease, full of a watery liquor; sessile at first, afterwards supported on short peduncles; of a dull olive color; growing in clumps near to each other.—It is rank'd by *Weis* under the genus of TREMELLA, and perhaps not improperly.

CONFERVA. *Gen. pl.* 1207.

Tubercula inæqualia, in fibris capillaribus, longissimis.

* *Filamentis simplicibus, æqualibus, geniculis destitutis.*

rivularis 1. CONFERVA filamentis simplicissimis æqualibus longissimis. *Sp. pl.* 1633. (*Dillen. musc.* 12. t. 2. f. 1. *Mich. gen.* t. 89. f. 7.)

River Conferva. Crow Silk. *Anglis.*

In gently flowing brooks and rivers; and sometimes upon wet moorish banks dripping with water, where it grows short, very tender, and like green velvet. IV.—X.

It consists of smooth simple unbranched threads, not distinguishably jointed, from a cubit to a yard long or more, as fine as hairs, of a tender substance, and a shining silky green color, waving with the stream.

The length of the threads depends much upon the place of growth. They are longest in rivulets, and shortest in stagnant waters. In these last it is often widely expanded, and swims on the surface.

Linnaeus has observ'd, that it sometimes grows upon thatch'd houses near the sea side, together with the *ULVA compressa*.

- β. In stagnant waters the threads are sometimes found shorter and thicker, not extended at length in one direction, but widely expanded and variously coil'd, without being entangled together. In this state they are about the size of human hairs, one or two feet long, of a pale-green shining color. See *Dillen. musc.* 13. t. 2. f. 2. *bona*.

fontinalis

2.

CONFERVA filamentis simplicissimis æqualibus digito brevioribus. *Sp. pl.* 1633. (*Michel. gen.*

R r r

p. 211.

*p. 211. n. 8. tab. 89. f. 8, 10, and 11. Dillen.
musc. t. 2. f. 3. bon.)*

Spring Conferva, or small Byffus-like Conferva.
Anglis.

It grows under water on the fides of limpid
springs or fountains, and on the banks of ri-
vers. IV.

It is extremely tender, and perhaps the least of all
the *genus*.

It consists of the finest threads, simple and un-
branch'd, about a quarter of an inch long, sel-
dom more, often less, growing in tufts and
diverging every way as from a centre, generally
of a dull fuscous green, sometimes a black
green, and, in fountains impregnated with acids,
of an ochre color.

Sometimes the threads grow so thick together as
to form a spongy mat, resembling a mouse's
skin.

Haller affirms, that the threads are frequently
branch'd, and we observ'd a few among our
specimens that were so.

confragosa CCNFERVA filamentis mucosis simplicibus
3. æqualibus violaceis.—a *Linnaeo* non descripta.

(*Dillen. musc. 15. t. 2. f. 4.*)

Cataract Conferva. *Anglis.*

We observ'd it upon the rocks in the waterfalls

on the mountain of Goatfield, in the isle of Arran, &c. VII.

It consists of threads of a slippery mucous substance, about half an inch long, of a beautiful violet or indigo color, so far as we could discern simple and without joints, but so extremely fine as to be undistinguishable by the naked eye, and so crowded together as to form, when moist, one uniform shining gelatinous mass, and when dry, a membranous lamina.—Its violet color readily distinguishes it.

** *Filamentis ramosis, æqualibus.*

bullosa 4. CONFERVA filamentis æqualibus ramosis, bullas aereas includentibus. *Syst. nat. edit.* 13. p. 818. *Sp. pl.* 1634. (*Loesel. Præf.* 173. t. 55. *Dillen. musc.* t. 3. f. 11. A. B.)

Bubbled cotton Conferva. *Anglis.*

In ditches, stagnant waters, and on the sides of cisterns frequent. IV. V.

It either floats upon the surface of the water, or is suspended in the middle of it.

The threads of which it is composed are of a yellow green color, sometimes a deep green, of various lengths, from three inches to a foot, very fine, scarcely visible to the naked eye, much branched, and undistinctly jointed. The

branches are so closely entangled together, that the air getting between them cannot easily evaporate, but when the plant floats upon the water, raises bubbles in it, by which character this species is readily distinguish'd.

It is of a soft substance, and in pure water, where the threads grow long, resembles Tow; but in muddy waters, where they are short, it is not unlike cotton, which being carefully collected and dry'd, turns whitish, and has sometimes been used instead of it, either as wadding to stuff garments with, or to make towels and napkins. We have also seen a coarse kind of paper made of it at *Edinburgh*.

canalicula- CONFERVA filamentis æqualibus basin versus
ris 5. ramosioribus. *Sp. pl.* 1634. (*Dillen. musc.* 21.
t. 4. f. 15.)

Velvet Mill Conferva. *Anglis.*

It is found frequently upon the planks in mill-dams, and in the cavities of water-pipes.

It grows in a thick cluster, so as to form a soft spongy substance, like a piece of velvet, of a deep-green color. The threads which compose it are from one to two inches long, greatly branched from the middle part towards the base, but simple, or only slightly divided at the extremity, which is the principal characteristic

teristic of this species. Though it be green and pellucid when recent, it turns dark and almost black in drying, and frequently becomes hard on account of the mud which is generally mix'd with it.

amphibia 6. CONFERVA filamentis æqualibus ramosis, ex-ficcatione coeuntibus in aculeos. *Sp. pl.* 1634. (*Dillen. musc.* 22. t. 4. f. 17. A. B. C.)

Amphibious Conferva. *Anglis.*

In ditches, on the banks of rivers, and other wet shady places. X—III.

It consists of numerous, very fine, dark-green threads, a little rigid to the touch, creeping together, and forming a wide, thick, spongy mat, sometimes two or three inches deep, the surface of which appears reticulated, owing to the various direction of the fibres. When dry, the fibres converge into points, a little stiff and rigid, when moist, they are again expanded. The plant has a mouldy ungrateful smell, and holds water like a sponge.

littoralis 7. CONFERVA filamentis æqualibus ramosissimis elongatis mollibus.—*Sp. pl.* 1634. *emendata.* (*Dillen. musc.* 23. t. 4. f. 1.)

The soft olive sea Conferva. *Anglis.*

Upon the sea rocks in the Frith of *Forth*, about *New-Haven*, &c.

It varies from four inches to a foot in length, and is of a yellow-green or olive color, divided into many branches, and numerous capillary threads, extremely fine, and without joints. The substance is tender and soft, but not gelatinous; by which characters it may be readily distinguish'd.

eruginosa CONFERVA filamentis ramosis mollibus digito
8. brevioribus viridissimis. *Sp. pl.* 1634. (*Dillen. musc.* 23. *t.* 4. *f.* 20.)

Sea-green Conferva. *Anglis.*

We gathered it upon the rocks on the western coast in several places.

This is a parasitical species, always adhering, so far as we have hitherto observ'd, to other CONFERVÆ or FUCI. By this character, and its elegant blue green color, it may be readily known.

The threads are seldom more than a quarter of an inch long, so extremely fine as to be hardly discernible by the naked eye, and branch'd into many other threads without order. It preserves its color when dry, and shines like silk, if it be previously wash'd with fresh water to free it from sea-salts.

CONFER-

Scoparia 9. CONFERVA filamentis proliferis fastigiatis hirtis. *Sp. pl.* 1635. (*Dillen. musc.* 24. t. 4. f. 23.)

Brush Conferva. *Anglis.*

Upon the western coast.

The color of this, when recent and young, is a dark dull green, but when old or dry, a russet-brown.

The plant, with all its branches, is from three to nine inches in length.

The branches are composed of numerous threads, all of equal length, forming bundles or clusters like a painter's brush or pencil. The threads themselves appear rough and hairy, owing to their being furnish'd with very fine bristly dents, growing alternate, but so close to each other as to render the threads pinnated. These dents vary much in length; sometimes they are so short as only to make the threads appear rough or hairy; at other times they are so long, as to render them beautifully feather'd.

The threads are perfectly cylindrical, but when magnified, are found to be jointed with numerous transverse *septa*, of a darker color than the other parts.

fœniculacea CONFERVA filamentis æqualibus ramosissimis, 10. ramis ramulisq; longissimis sparsis. *Huds. Fl.*

Angl. p. 479. n. 4. (*Dillen. musc.* 16. t. 2. f. 8.)

Fennel-leav'd Conferva. *Anglis.*

In basons of water, left by the recess of the tides amongst the rocks on the western coast.

The threads are commonly a foot long or more, alternately branched, the branches thinly set, divided and subdivided, something like the leaves of fennel, but much finer. When young, they are soft, and of a tawny-green color, but afterwards become brown and somewhat rigid. The microscope discovers them to be uniform, or not at all jointed; it is therefore of doubtful genus, for want of fructifications. The tenuity of its parts however, and outward habit, entitle it for the present to a place among the CONFERVÆ.

tomentosa Conferva filamentis æqualibus ramosissimis, ramis simplicibus confertis fuscis. *Huds. Fl. Ang. p. 480. n. 9. (Dillen. musc. 19. t. 3. f. 13.)*

Rusty Flock Conferva. *Anglis.*

Amongst the sea rocks on the western coast frequent, generally adhering to the larger fucuses.

It varies from one inch to six or more in length, and is of a russet-brown color, soft to the touch.

The threads are so extremely fine as to be scarcely discernible by the naked eye, much branched, destitute

destitute of joints, many of them crowded or twisted together in such a manner as to resemble thick threads or thongs, which have the appearance of large branches, out of which the finer threads seem to grow, though in reality the thicker threads are compos'd of these finer ones. This peculiarity, together with the russet color, readily distinguishes this species.

*** *Filamentis hirsutis.*

spongiosa CONFERVA filamentis ramosis æqualibus, ramulis simplicibus imbricatis. *Huds. Fl. Ang. p. 480. n. 11. (Moris. hist. Ox. III. 650. sect. 15. t. 9. f. 6. bon.)*

Sponge Conferva. *Anglis.*

Amongst the sea rocks in the Frith of *Forth*, and many other places.

The plant is about three inches long, of a dark, dull, green color, turning when old to a fuscous green.

Many stalks arise from the same root, irregularly branch'd, the stalks and branches similar, of the size of small packthread, every where closely imbricated with fine, short, simple, rigid hairs, which appear through the microscope to be jointed with numerous transverse *septa*, and to grow round the branches without order, like the hairs on a mouse's tail.

CONFERVA.

verticillata CONFERVA filamentis ramosis, geniculatis, ramulis verticillatis furcatis incurvis.—*Species non descripta.* (*Fig. nulla.*)

Verticillate sponge Conferva. *Anglis.*

Amongst the sea rocks, in basons of water left by the tides, in the Frith of *Forth*, and many other places, not unfrequent.

It is about four or five inches long, of a dark dull-green color, turning fuscous when old.

Many geniculated branched stalks, of the size of coarse threads, arise from the same root. The branches without order, and both every where covered with close whirls, of fine short, elastic, forked hairs curving inwards, so that the whole plant appears to the naked eye to be rough and spongy like the preceding, and at first view might be easily mistaken for it, but the microscope soon discovers the difference.

equisetifolia CONFERVA geniculata ramosa, ramis subulatis ramulis dichotomis verticillato-imbricatis.—*Species non descripta.* (*Fig. nulla.*)

Red Sponge Conferva. *Anglis.*

In the Frith of *Forth*, but rare. A specimen was communicated by Mr. *Nalden*. The same we also found on the coast of *Cornwall*, and at the rocks call'd the *Needles*, near the isle of *Wight*.

It

It is three or four inches long, of a red color, and the size of packthread.

The principal stalk shoots out lateral taper branches, growing generally alternate, but often without order, the lowermost the longest, so that the plant seems to affect a conical form. These branches are again frequently subdivided in the same manner a second time, and all are every where closely covered with whirls of short dichotomous *ramuli*, about a line in length, lying over one another, so as to make the whole plant appear rough and spongy.

View'd under the microscope, the whole fabric of this *Conferva* appears to be curiously jointed. In the principal stalk and the larger branches, the interstices between the joints are cylindrical. In the whirls they are contracted at each end or joint, as if tightly bound with a string. Through the centre of these interstices runs a red parenchymous line; the joints also are red, the other parts diaphanous.

**** *Filamentis nodosis.*

Auriculatis CONFERVA filis simplicissimis setiformibus rectis, geniculis crassioribus angulatis. *Sp. pl.*
15. 1635. (*Dillen. musc.* 39. t. 7. f. 47.)

Upright

Upright river knotted Conferva, or Horsetail
Conferva. *Anglis.*

This was gathered by Mr. *Stuart* amongst the stones in the river *Lednaig*, near the village of *Comrie*, four miles west of *Crieff*. The river empties itself into the *Ern*. The same was also found by Mr. *Yalden* in like places at *Craig-Hall* near *Edinburgh*.

It consists of several erect threads growing in a cluster from the same base, from three to six inches high, generally single, but sometimes sparingly branch'd, about the size of a hog's bristle, knotted throughout at equal distances, with prominent gouty joints; the joints about one-tenth of an inch asunder, the whole of a dull-green color when moist, but blackish when dry, the substance a little rigid and tough.

gelatinosa CONFERVA filis ramosis moniliformibus, articulis globosis gelatinosis, *Sp. pl.* 1635. (*Dillen. musc.* 36. t. 7. f. 42. cum varietatibus. *Dillen. musc.* 37, & 38. tab. 7. f. 43, 44, 45, 46. CHARA *batrachosperma*. *Weis cryptog.* p. 33. tab. 1. fig. 1, 2. *bona.*)

Frog-Spawn Conferva. *Anglis.*

It grows in deep fountains, springs, and rivulets of the purest water, adhering to sticks and stones. We saw specimens that were collected in the island of *Mull*. VI. VIII.

The

The whole plant consists of a quaking gelatinous substance, slipping through the fingers like Frog-spawn. The color is variable, either purple, mouse-color'd, green, blue, or black. The length from one to three or four inches.

It grows in clusters compos'd of branched, soft, flimsy stalks, moving with the water. These stalks and branches appear like necklaces or strings of small beads, being furrounded, or strung as it were, with numerous gelatinous globules, placed almost contiguous to each other. In these globules, at a proper season, may be seen dark specks, which are the fructifications.

Under the microscope the plant exhibits a different view. The stalks then appear to be fistular and pellucid; and the globules which surround them, when highly magnified, are discovered to be balls, or rather whirls of very minute, branched, capillary threads, to which are affix'd small yellow capsules or berries, full of brown seeds. This singular kind of fructification, first discover'd by Mr. *Buttner*, determin'd the celebrated Mr. *Weis*, in his Treatise on the *Plantæ cryptogamicæ*, published at *Gottingen* in the year 1770, to rank this plant under the genus of CHARA.

This

This vegetable, by its place of growth, indicates the purest and most limpid water.

***** *Filamentis geniculatis.*

capillaris

17.

CONFERVA filis geniculatis simplicibus, articulis alternatim compressis. *Sp. pl.* 1636. (*Dillen. musc.* 25. t. 5. f. 25. A. B.)

Marsh Thread, or Thread Conferva. *Anglis.*

It is found in marshy ditches and stagnant waters near the sea-side.

This consists of simple unbranched threads, a cubit long or more, full of joints, and of a yellowish green color. These threads are variously coil'd together, and sometimes float in great quantities upon the surface of the water, but are more frequently suspended in the middle region of it. They are usually of the size of small sewing thread, their joints very numerous, and of a darker green than the interstices, which are pellucid and tubular; and often collapse in alternate order.

β. There is a smaller and shorter kind sometimes found in fresh-water ditches, which seems to be only a variety of the foregoing. See *Dillen. musc.* p. 26. t. 5. f. 25. B.

corallina

18.

CONFERVA filis geniculatis dichotomis. *Syst. nat. edit.* 13. p. 818. CONFERVA corallinoides.

noides. Sp. pl. 1636. (Dillen. musc. 33. t. 6. f. 36. et ejus varietas minor, t. 6. f. 37. CONFERRA geniculata. Ellis. Philos. Transact. vol. 57. t. 18. fig. f. F. opt.

Gelatinous Coralline Conferva. *Anglis.*

On the Western coast, in deep waters, sometimes dragg'd up in fishing-nets, or cast upon the shore in storms. VIII.

The height of this is about three or four inches.

The substance tender, gelatinous, slippery and pellucid.

The color, when fresh, a bright red or scarlet ; in decay, a pale red, sometimes ting'd with green.

The threads are regularly dichotomous and jointed. The joints thick or knee'd at the ends, like the leg or thigh bones.

The fructifications or flowers surround the joints like ruffles, but are rarely found.

The plant, in drying, tinges paper with a fine red color, and its succulency then vanishes, leaving behind only a filmy skin.

polymorpha CONFERRA filamentis geniculatis, ramis fasciculatis. *Sp. pl. 1636. (Dillen. musc. 32. t. 6. f. 35. A. B. C. Oeder. Dan. t. 395. bona. Ellis. Philosoph. Transact. vol. 57. p. 426. tab. 18. fig. a. A. et b. B. opt.)*

Black

Black tufted Conferva. *Anglis.*

Upon rocky shores frequent; generally adhering to the *FUCUS nodosus*. *Lin.* VIII.

It grows in short thick tufts; the threads one or two inches long; dichotomously branched, and formed into bundles at the summits; closely and finely jointed throughout; the joints equal, the *septa* annular. The whole plant is of a dark fuscous color, turning black when old or dry'd.

The fructifications are *diœcious*, the males growing upon one plant, the females upon another. The males grow in small conic catkins, in pairs, upon the very summits of the branches; the females, in short single oval capsules, sessile and lateral, a little beneath the summits.

vagabunda CONFERVA filamentis geniculatis flexuosis,
20. ramis ramulisq; brevioribus. *Sp. pl.* 1637.
(*Dillen. musc.* 30. t. 5. f. 32. A. B.)

Sea Wool Conferva. *Anglis.*

In sea marshes and ditches, suspended in the middle of the water, without root or basis.

It is compos'd of jointed threads, of a pale green color, about two inches long, waved in various directions, and greatly branched, the branches divided and subdivided into many short capillary segments, appearing in the water like wool.

The joints are very fine, hardly discernible without a microscope. The plant, when dry'd, coheres together, and forms a substance like a piece of gauze or fine linen.

glomerata

21.

CONFERRA filamentis geniculatis, ramulis brevioribus multifidis. *Sp. pl.* 1637. (*Moris. hist. Ox.* 3. p. 644. *sect.* 15. t. 4. f. 2. *quæ modum glomeratum exprimit.* *Dillen. musc.* 28. t. 5. f. 31. A. B.)

Green Cluster Conferva. *Anglis.*

In pure fresh-water springs, brooks, and small rivers.

It varies much, but may be distinguish'd from its congeners, by having jointed threads from six inches to a foot in length, of a green color, divided and subdivided into numerous alternate little branches, terminating in many short expanded pencil-like segments. The branches are often twisted together in a cord or bundle at the base and middle part, but dilated at their extremities. The joints are every where visible with the aid of a microscope, the intersections appearing like dark green spots, and the interstices pellucid.

It varies with threads more or less branched, more or less lax or crowded, and the extreme segments longer or shorter.

S f f

CON-

rupestris CONFERVA filamentis geniculatis ramosissimis
 22. viridibus. *Sp. pl.* 1637. (*Dillen. musc.* 28.
t. 5. f. 29.)

Green Rock Conferva, or Sea Beard. *Anglis.*

Upon the sea rocks plentifully.

This is commonly about two or three inches long,
 of a deep green color, consisting of numerous
 very slender jointed and branched threads arising from the same root, and forming thick bundles or clusters, dilated upwards. The branches grow without order, and are most numerous towards the summits of the threads. The joints are pellucid, close and fine, and a little contracted at the intersections, where the color is a very dark green.

β. There is a fresh-water variety of this, of a paler green color, divided into fewer branches at the extremities, which is the only difference. It is figured by *Dillenius. Hist. musc. t. 5. fig. 28.*

It grows upon the planks and boards, that are constantly wet, about water-mills.

nodulosa CONFERVA filamentis geniculatis ramosissimis,
 23. articulis nodulosis, fructificationibus tuberculatis lateralibus.—CONFERVA *elongata?*
Huds. Fl. Angl. 484. n. 25. (*Dillen. musc.* 35.
t. 6. f. 38.)

Red knotted sea Conferva. *Anglis.*

On

On the sea shores frequent, often adhering to Fucuses.

Its usual length is about four or five inches; its color red, sometimes tawny or sandy.

The threads are about the size of sewing silk, closely jointed, and much branched; the branches divided and subdivided without order. The joints are a little knotted or slightly protuberant, short and numerous; the *septa* contracted, and of a deeper red.

The fructifications are very minute red tubercles, growing single on the sides of the branches; those near the summits sessile, the inferior ones often pedunculated, and all generally subtended by a lateral spinule.

These tubercles are probably male-fructifications; for in some specimens, with the aid of a microscope, we discovered, besides these tubercles, many small red seeds imbedded in the substance of the threads, particularly in the very joints or *septa*; so that this plant may be considered as monoecious.

amæna β. There is a variety of this with finer threads; the joints hardly protuberant or scarcely knotted. Some consider this as a distinct species, but the fructifications are similar to those of the foregoing.

diaphana

24.

CONFERVA filamentis geniculatis ramosissimis, ramis dichotomis apice forcipatis, septis ruberrimis, articulis diaphanis.—*Nova species.* (Fig. *nulla.*)

Red dotted Conferva. *Anglis.*

Upon rocky shores, in basons of water left by the tides, and often adhering to Fucuses.

It is a very delicate species, about one or two inches high, the color red.

The threads are extremely fine, jointed, and very much branched; the branches dichotomous, and their extremities incurv'd like a pair of pincers. The joints are perfectly diaphanous, short and numerous, and a little contracted at the ends. The *septa* are deep red and opaque, so that the whole plant, with its ramifications, seems, to the naked eye, to consist only of a branched series of small red dots.

plumosa

25.

CONFERVA filamentis geniculatis ramosissimis compressis, ramis supra-decompositis alternatim pinnatis, fructificationibus ovatis dioicis. *Ellis.*—CONFERVA *rubra.* *Huds. Angl.* 486. *n.* 33. (*Pluk. phyt. t.* 48. *f.* 2. *mala.* *Ellis. Philos. Transact. vol.* LVII. *tab.* 18. *p.* 426. *fig. c, C. d, D. opt.*)

Red-feather'd Conferva. *Anglis.*

Upon the Western coast we found fragments of it cast upon the shore. VIII.

This is from three to six inches long, of a bright red or purple color when fresh, and one of the most elegant of our sub-marine plants.

It affects a conical form of growth, having a principal stem or stalk continued through the middle of the plant, from the base to the summit. This central stalk is of the size of a coarse thread, of a cartilaginous substance, indistinctly jointed, generally covered with rough spongy hairs, slightly compress'd, and commonly a little waved in its growth.

The branches are of a lanceolate form, distichous, and alternately pinnated, each having a central rib continued through its whole length, oftentimes waved.

These branches are again alternately pinnated with lesser secondary ones, and these again frequently a third time in the same order, so as to end at last in fine linear subulate jointed segments, the joints numerous, short, pellucid, and nearly cylindrical; the *septa* of a deep red color.

The fructifications are male and female upon distinct plants.

The males are small red conic grains or capsules growing out of the finer segments on very short peduncles.

The females are a little larger, of a short oval form, and grow quite sessile, on the sides of the ultimate pinnules.

ciliata 26. CONFERVA filamentis geniculatis dichotomis apice forcipatis, articulis verticillatim ciliatis.—

A Linnæo non descripta. (Ellis. *Philos. Transact.* vol. LVII. t. 18. fig. h, H. opt.)

Ciliated Conferva. *Anglis.*

Upon the Western coast, entangled among the branches of the FUCUS *plicatus*. *Lin.*

This is one of the smallest species of the genus.

The largest specimen we collected did not exceed an inch in length. The color of it is red.

The threads are extremely fine, jointed, and dichotomous; the summits incurv'd like a pair of *forceps*. The joints are very short, numerous, pellucid, and cylindrical. The *septa* red.

But what most particularly characterizes this species is, that the head of each joint is encircled with a whirl of extremely small short white *cilia*, appearing to the naked eye like down, but, when highly magnified, are found to resemble short sessile oval-acute leaves.

We have never yet seen its fructifications.

BYSSUS.

BYSSUS. *Gen. pl.* 1208.

Lanugo aut *Pulvis* simplicissimus.

* *Filamentosæ.*

septica 1. BYSSUS capillacea mollissima parallela fragilissima, pallida. *Syst. nat. edit.* 13. p. 819. (*Michel. gen. pag.* 211. n. 10. t. 89. f. 9. *bona. Dillen. musc. p.* 6. t. 1. f. 12. A. B. *opt. et fortasse t.* 1. f. 9.)

The Mouse Skin Cask Byffus. *Anglis.*

In wine-vaults, upon the casks and walls frequent.

This, at its first appearance, is white, and resembles flakes of snow; afterwards it turns yellow, and last of all blackish, soft, and spongy, very like a mouse's skin. In this state, when grown old, it has sometimes black grains at its base like gun-powder.

If suffered to remain any long time upon the casks, it decays the timber very much.

In its last black and soft state it is excellent to staunch blood, perhaps superior even to the celebrated *Agaric*.

flos aquæ 1. BYSSUS filamentis plumosis natantibus. *Sp. pl.* 1637. (*Fig. nulla.*)

Green Paper Byffus. *Anglis.*

S f f 4

In

In stagnant waters. IV. V.

It consists only of a greenish farina, the particles of which, when view'd with a microscope, appear to be branched and feathered. These particles concrete upon the surface of the water, and form a wide thin film or pellicle.

Weis in his *Plantæ cryptogamicæ* pag. 19. denies it to be a proper vegetable, asserting it to be compos'd of the particles only of decay'd aquatic plants, which, being specifically lighter than water, float on its surface.

phosphorea BYSSUS lanuginosa violacea lignis adnascens.

3.

Lin. Sp. pl. 1638. (*Michel. gen. p.* 211. *n.* 12, *tab.* 90. *fig.* 3. *Dillen. musc. p.* 4. *tab.* 1. *f.* 6.)

Violet-color'd Byssus. *Anglis.*

Upon the bark of rotten wood and sticks, in the autumn and winter frequent.

It creeps upon decay'd wood, in patches of various sizes, resembling a thin downy membrane, of an elegant blue-violet color.

purpurea 4. BYSSUS purpurea capillacea perennis. (*Michel.*

Gen. p. 211. *n.* 13. *tab.* 90. *f.* 2 ?)

Crimson Byssus. *Anglis.*

Upon the base of the abbot *Mackinnon's* tomb, in the ruin'd abbey at *J. Columb-kill.*

It

It consists of extremely short filaments, crowded together so as to form a mat or crust, extremely like a piece of crimson plush or velvet.

When moisten'd it yields a sweet scent, something like violets, which induced me at first to think it the *BYSSUS foliatus*. *Lin.* but that is farinaceous, and the kind just describ'd is capillary. *Linnaeus* however, (in his *Flor. Suec. p. 438.*) says, that he has perceiv'd red filaments in the *B. foliatus*, growing upon a saffron-colour'd farinaceous crust, so that ours may possibly be considered yet as a variety of the *B. foliatus*. *Lin. sp. pl. 1638.*

Haller ranks the *B. foliatus* amongst the crustaceous Lichens, and says he could discover in it no filaments, but only a red crust slightly farinaceous, turning to a yellowish-green color in decay. *Helvet. hist. III. p. 103. n. 2090.* In the midst of these uncertainties, we judg'd it most adviseable to describe ours as a distinct species, in order to avoid confusion.

velutina 5. *BYSSUS capillacea viridis, filamentis ramosis.*
Syst. nat. edit. 13. p. 819. Sp. pl. 1638. n. 3.
(Michel. gen. 211. n. 7. tab. 89. f. 5. Dillen. musc. 7. tab. 1. f. 14.)

Green velvet Byssus. *Anglis.*

Upon

Upon damp clayey banks, and on the sides of ponds and rivers in shady places, &c. chiefly in the winter season.

It consists of extremely short, erect, single, and branched filaments, invisible without a microscope, but crowded together so as to resemble a green velvet carpet.

aurea 6. BYSSUS capillacea pulverulenta, fructificationibus sparsis, filamentis simplicibus ramosisque. *Sp. pl.* 1638. (*Petiver. Gaz. t.* 15. *f.* 3. *Dillen. musc.* 8. *tab.* 1. *f.* 16. *Mich. gen.* t. 89. *f.* 2.)
Saffron Rock Byssus. *Anglis.*

Upon the rocks on the highland mountains frequent, as in *Rum*, *Skye*, *Breadalbane*, &c.

It is compos'd of very short soft threads, some single and some branch'd, closely entangled together, and growing in little tumid cushion-like clusters, of a substance like fine wool, and of a saffron color when fresh, but turning grey or hoary when preserv'd:

fulva 7. BYSSUS filamentis ramosis fulvis. *Huds. Ang. p.* 487. (*Dillen. musc.* 9. *t.* 1. *f.* 17.)
Red-haired Byssus. *Anglis.*

Upon wet half-decay'd wood, lying in shady places, in autumn and winter.

It is compos'd of long branched and tawny threads, entangled together in a loose mat.

nigra 8. BYSSUS filamentis ramosis rigidis atris faxis adnascens. *Huds. Ang.* 487. BYSSUS *antiquitatis?* *Syst. nat. edit.* 13. pag. 819. *Sp. pl.* 1638.

Black Rock Byffus. *Anglis.*

Upon the micaceous rocks on the highland mountains frequent, as on *Ben-Lomond*, *Goatfield*, in *Arran*, &c.

It consists of fine branched black hairs, about a line in length, closely matted together, and at some seasons sprinkled over with a black powder. On moist rocks the hairs are longer, and feel soft and downy; on dry ones, they are extremely short and rigid, scarcely visible to the naked eye; and grow together so as to form a hard brittle crust.

I suspect the *B. antiquitatis* *Lin.* to be the same with the above; for in the last edition of the *Systema Naturæ*, that author seems to allow it to belong to the fibrous division of this genus. And the black powder with which our kind is sometimes invested might have first induced him to place it amongst the farinaceous species.

candida 9. BYSSUS filamentis ramosissimis, ramis fasciculatis albidis. *Huds. Angl.* 488. n. 8. (*Raii Synops.*

Synops. 476. *t.* 23. *Dillen. musc.* 7. *t.* 1. *f.* 15.
A. B.)

White Cobweb Byffus. *Anglis.*

Upon rotten leaves, and damp decaying wood, in autumn and winter.

It is generally of a white color, but sometimes grey or yellow, of a tender downy substance, from half an inch to four or five inches in length, spreading flat upon, and adhering closely to the substance on which it grows.

It takes its origin from a kind of mouldy or downy base, and spreads widely into many fine delicate cobweb-branches, divided and subdivided, the extremities ending sometimes in single capillary fibres, and sometimes in dilated pencils.

What we have now describ'd is of a doubtful nature. Instead of being a perfect plant, it may possibly be nothing more than the fine spreading radicles of some species of *Fungus*.

β. We have sometimes observ'd many layers of it placed upon one another, and so closely matted together as to lose all distinction of fibres, and to form a coat or *lamina*, exactly resembling a portion of a kid-skin glove.

This is nearly related to, if not the very same kind of substance with that mentioned by Mr. Ray
in

in his *Synopsis*. pag. 25. n. 27. under the name of *Oak-Leather*, growing in the crevices of decay'd wood. Of this last kind we have seen specimens, differing from the first only in being much thicker, tougher, and of a buff color, not unlike a piece of buck-skin leather.

This, Mr. Ray informs us, the common people in *Ireland* and elsewhere make use of to heal wounds and ulcers, either first spreading salve upon it, or else simply laying it upon the part affected.

**** Pulverulentæ.**

saxatilis BYSSUS pulverulenta cinerea rupes operiens.

10.

Sp. pl. 1638. (*Fig. nulla.*)

Grey Rock Byffus. *Anglis.*

Upon rocks that have been long expos'd to the weather, frequent.

This is nothing but a grey farinaceous powder which covers the rocks, particularly such as are calcareous, and that sometimes in such quantities as to form a friable crust, a line in thickness, whitish when broken.

candelaris BYSSUS pulverulenta flava lignis adnascens. *Sp.*

11.

pl. 1639. (*Dillen. musc. 3. t. 1. f. 4.*)

Yellow Powder Byffus. *Anglis.*

Upon old pales, and the bark of trees between
the

the crevices, and upon the timber of old houses, which has been long expos'd to the weather.

It is only a fine yellow or sulphur-color'd powder.

We have sometimes seen it cover old mosses, which appeared exactly as if they had been powder'd with flour of brimstone.

It bears some resemblance to the rudiments or first beginning of the *LICHEN candelarius*, but continues unaltered, without ever forming a crust, or producing shields.

botryoides 12. BYSSUS pulverulenta viridis. *Sp. pl.* 1639.

(*Dillen. musc.* 3. t. 1. f. 5.)

Green Cluster Byffus. *Anglis.*

On moist shady banks, on the sides of ditches, and sometimes upon tiles and wet walls on the north side of old houses. VI.—IX.

It consists of small green globules, heap'd together in clusters, so as to form a soft coat or covering of a deep green color, appearing a little rough on the surface, like chagrin. The globules, view'd through a microscope, seem to be somewhat gelatinous.

incana 13. BYSSUS pulverulenta incana, farinæ instar strata.

Sp. pl. 1639. (*Dillen. musc.* 3. t. 1. f. 3.)

Mealy Byffus. *Anglis.*

Upon the bare earth, on shady banks; upon old decay'd

decay'd moss, and on the trunks of trees in damp shady places, in the autumn and winter-seasons.

It is a whitish grey friable powder, consisting of small shapeless particles, for the most part loose and incoherent.—After rains, or when damp, it is of a glaucous or blue-grey color.

laetea 14. BYSSUS pulverulento crustacea albissima. *Sp.*
pl. 1639. (*Dillen. musc.* 2. t. 1. f. 2.)

White-wash Byssus. *Anglis.*

It covers old *Hypnums* and *Lichens*, which grow upon rocks and the trunks of trees.

It invests the substances upon which it grows with a thin, wide, smooth, hard, uneven, brittle crust, making them appear exactly as if they had been white-wash'd.

At some seasons, this crust produces on its surface unequal lumps or tubercles of a yellowish or dirty white farinaceous substance.

These, we apprehend, may be term'd the fructifications.

This species is certainly more nearly related to the *genus* of *Lichen* than that of *Byssus*. But we had the pleasure of examining *Dillenius's* own specimens, and therefore are confident that our description is justly apply'd.

FUNGI.

F U N G I.

AGARICUS. *Gen. pl.* 1209.

FUNGUS horizontalis, subtus lamellosus.

* *Stipitati, pileo orbiculato.**chantarel-
lus* 1.

AGARICUS stipitatus, lamellis ramosis decurrentibus. *Sp. pl.* 1639. (*Ger. emac.* 1580. f. 2. *Sterb. Fung.* p. 59. tab. 4. B. B. *Vaill. Paris.* t. 11. f. 14. 15. *bon. et ejus varietates* t. 11. f. 9. 10. 11. 12. 13. *Schæffer. Fung.* tab. 82. fig. omnes. *Oed. Dan.* t. 264. opt.)

Yellow Agaric or Chanterelle. *Anglis.*Paddock-Stool. *Scotis.*

In woods frequent. We first observ'd it in the garden at *Bellmount*, in the county of *Angus*. IX. X.

The color of this is yellow all over, like the yolk of an egg. The substance tough. The *pileus*, when young, is orbicular, and a little depress'd in the centre; when full grown, the rim becomes waved and variously lobed. The *lamellæ* or gills resemble thick projecting veins, of the same substance with the *pileus*, and are branched, curl'd, and run down a part of the stalk.

It

It has a pleasant smell, something like a ripe plumb, and when properly stew'd, a flavoury taste, otherwise tough and subacid.

integer 2. A. stipitatus, lamellis omnibus magnitudine æqualibus. *Sp. pl.* 1640. (*Sterb. t.* 22. F. *Shæffer. tab.* 15. 16. 58. 75. 92. *opt. et ejus varietates, tab.* 93. 94.)

Equal-gill'd Agaric. *Anglis.*

In woods frequent. We observ'd it at *Duplin*, near *Pertb*, and in *Logton* wood, near *Dalkeith*, &c. IX. X.

The *Pileus* is about three inches in diameter, convex, smooth, and red. The gills are white, numerous, of equal size, and generally all extended from the rim to the stalk. The stalk is solid, white, a finger thick, and short, being only about two inches high. The seeds are globular, and may be easily discerned by the microscope, if a small portion of a ripe gill be put into a little water in the watch-glass, or into a drop of water upon the glass-slider belonging to the apparatus, for they will soon be detached from the gill, and appear in the water.

Though the natural color of the *Pileus* is red, it is yet sometimes found of a dirty white, a rawny brown, and a blue-green color.

T t t

The

The substance breaks short, and is a little acrid, but is frequently eaten in *Germany* and *Russia*.

muscarius

A. stipitatus, lamellis dimidiatis solitariis, stipite
3. volvato, apice dilatato, basi ovato. *Sp. pl.*
1640. (*Ger. emac.* 1481. *ad imum paginae ad*
sinistram. *Sterbeck. tab.* 22. A. *Michel. gen.*
t. 78. *f.* 1. 2. A. B. c. *Schæffer. t.* 27. *opt.* 3
t. 28. *absque verrucis.*)

Bug Agaric. *Anglis.*

This, and almost the whole genus, are call'd without distinction in *Scotland*, *Paddock-Stools*.

In woods not unfrequent. We observ'd it at *Blair* in *Athol*, and in the woods at the cascades of *Moneys* near *Taymouth*, &c. IX. X.

This is a very elegant species.

The stalk is white, thick, solid when young, bulbous at the base, and surrounded in the middle with a broad, lax, pendulous, annular membrane, call'd by *Linnaeus* a *Volva*, but which in reality is only a portion of the *Volva*.

The *Pileus* when young is hemispherical, when full grown nearly flat, large, often six or eight inches wide, of a red color, spotted over with white, angular, downy warts, which are the remains of the *Volva* with which the *Pileus* is envelop'd at its first eruption from the earth.

The gills are numerous and white, the greatest part

part extended from the rim to the stalk, some few only half way. In decay they turn to a yellowish brown color.

β. It varies sometimes with a *Pileus* destitute of warts. See Schæf. fung. tab. 28.

It is of an acrid and deleterious quality. Haller relates, that six persons of *Lithuania* in *Poland* perish'd at one time by eating it; and that in *Kamtschatka* it had driven others raving mad. Three or four of these Agarics may be eaten without danger, but ten will intoxicate or bring on a delirium. The *Russians* however are bold enough to eat these, and almost every other species of *Fungus*. Perhaps they are pleas'd with its inebriating quality, for in the *Natural History of Kamtschatka*, (p. 208, 209.) we are told that the inhabitants prepare a liquor from an infusion of this Agaric and the runners of the *Epilobium angustifolium*, which taken in a small quantity exhilarates the spirits, but in a larger dose brings on a trembling of the nerves, intoxication, delirium, and melancholy.

Linnaeus informs us that flies are kill'd, or at least stupified, by an infusion of this *Fungus* in milk; and that the express'd juice of it anointed on bedsteads, and other places infested, effectually destroys bugs.

verrucosus 4. A. caulescens, pileo convexo cinereo, verrucis lamellisque albis, stipite basi crassiusculo. *Huds. Fl. Angl. p. 494. (Sterb. fung. 206. t. 20. fig. K. Schæf. fung. tab. 91, & 261. opt. et ejus varietas. tab. 90. & fortasse tab. 20. 99. & 258.*

Warty Agaric. *Anglis.*

In woods and shady places. X.

The *Pileus*, at its first appearance, is sessile, nearly sphaerical, springing from a *Volva*.

The stalk, when full grown, is white or grey, a finger thick, from four to six inches high, bulbous at the base, and surrounded in the middle with a white membranaceous ring, which continues without falling off.

The *Pileus* is of a dull grey color, spotted over with white warts, of a convex or nearly hemispherical figure when half grown, but almost flat when old, and three or four inches in diameter.

The gills are white, and the whole substance fleshy and brittle.

It is very nearly related to the *A. muscarius*, and perhaps may be only a variety differing in color. Like that it varies sometimes without warts. See *Schæffer. tab. 241.*

lactifluus 5. A. stipitatus, pileo plano carneo lactescente, lamellis rufis, stipite longo carneo. *Sp. pl. 1641. (Schæfferi fung. tab. 73. opt. & fortasse t. 5.)*

Milky

Milky Agaric. *Anglis.*

In woods frequent. We observ'd it at *Blair* in *Athol*, at *Duplin* near *Perth*, &c. IX.

The stalk is about two or three inches high, firm and solid, of a finger's thickness, and generally of a reddish brown color. The *Pileus* is nearly of the same color as the stalk, from one to four inches in diameter, smooth or slightly villose, the centre depressed, the rim deflex'd. The gills are usually of the same colour with the *Pileus*, and both when wounded yield a white milky juice, of a mild inoffensive taste, very obvious in the younger plants, but scarcely visible in the old ones.

This is reputed to be one of the best kinds for the table, though never, I believe, eaten in *England*.

Haller makes this and the *A. deliciosus* *Lin.* to be only varieties of each other. This last however bleeds with a yellow or saffron juice, and the *Pileus* is villose, and mark'd with alternate concentric circles of paler and darker colors. This we do not remember to have yet found in *Britain*. See its fig. *Schæf. t. 11, 12. opt.* *Haller. Helvet. hist. 2419.*

piperatus 6. *A. stipitatus*, pileo planiusculo lactescente, margine deflexo, lamellis incarnato-pallidis. *Lin. Sp. pl. 1641. (Schæf. t. 83. opt.)*

Pepper Agaric. *Anglis.*

In woods frequent. We observ'd it at *Blair* in *Atbol*, and many other places. IX. X.

The most usual color of this *Fungus* is a dirty white, with a little mixture of grey. Sometimes, especially when full grown or in decay, it acquires a little tinge of red or yellow.

The stalk is a finger thick, and short, being only about two inches high.

The *Pileus* is from one to four inches wide, convex when young, and the margin constantly deflex'd. When full grown it becomes depress'd in the centre, and in decay often funnel-shap'd. The surface more or less villose.

The gills are pale, numerous, and close; and when either these or the *Pileus* are wounded, a cream-color'd juice distills from both, extremely acrid to the tongue.

The substance is fleshy and brittle.

This *Fungus*, though the most acrid and suspicious of the whole tribe, is eaten in great quantities by the *Russians*. They fill large vessels with them in the autumn, season or pickle them with salt, and eat them in the ensuing *Lent*.

But as the free use of these and others of the genus has frequently been attended with fatal consequences, it may not be amiss, in this place,

place, once for all, to admonish the reader of the general nature and dangerous qualities of them; which I cannot do better than in the words of the great and ingenious *Haller*.

“ All *Fungi* are crude in their nature, of speedy
“ growth and sudden decay. They spring up,
“ arrive at maturity, and perish in a few days,
“ most of them dissolving away in a black
“ corrupted liquor, of a fetid nauseous smell.
“ They are the food of snails, beetles, flies,
“ maggots, and the *Nidus* where they deposit
“ their young.

“ The *Russians* indeed devour almost every spe-
“ cies, even those which other nations esteem
“ the most poisonous, such as the *AGARICUS*
“ *muscarius*, *piperatus*, &c. but all of them
“ are a doubtful and suspicious food, and the
“ most *innocent* have proved sometimes preju-
“ dicial.

“ By *analysis*, it is found that seven parts of
“ eight in their composition are watry. They
“ yield, by fire, a yellow spirit like hartshorn,
“ a yellow empyreumatic oil, and a dry, vola-
“ tile, crystalline salt; so that their nature
“ is evidently alkaline, extremely prone to cor-
“ ruption.

“ Their fibres are tough and very difficult to di-
“ gest, swelling in the stomach like a sponge;

“ so that there are instances of their remaining
 “ undigested for three days, before their bad
 “ effects have appear’d. The maladies they
 “ occasion are a swelling of the abdomen, rest-
 “ lessness, heart-burns, vomitings, colics, dif-
 “ ficult breathings, hiccoughs, melancholy,
 “ *diarrhæas* accompanied with a *tenesmus*, and
 “ gangrenes. To which dreadful complaints
 “ the acrimonious quality of some *Fungi* bring
 “ on besides inflammations in the mouth, with
 “ bloody lotions and bloody stools. Lastly, it
 “ is certain that some species have an intoxi-
 “ cating quality, followed often by deliriums,
 “ tremblings, watchings, faintings, apoplexies,
 “ cold sweats, and death itself. Some have
 “ fancied that skilful cookery would deprive
 “ them of their bad effects, and that oils
 “ would sheath their noxious qualities; but
 “ these are fatal deceits, not to be trusted.
 “ To persons suffering from eating any species of
 “ *Fungi*, the most approved and speedy remedy
 “ is to use emetics and cathartics.” *Haller.*
Helvet. hist. n. 2338.

campestris

7.

A. stipitatus, pileo convexo squamato albido, la-
 mellis ruffis. *Sp. pl.* 1641. (*Sterb. fung. t. 1. f.*
C. D. et omnes ejusdem tabulæ. Batarra p. 29.
t. 27. A.)

Common

Common Mushroom, or Champignon. *Anglis.*

In dry pastures after rains, as in the king's park at *Edinburgh*, &c. IX.

The stalk is short, white, solid, a finger thick, and surrounded with an annular membranaceous *Volva*.

The *Pileus* when young is white, hemispherical, fleshy, and covered with lacerated scales; the rim inflected.

The gills are rose or pink-colour'd, arched, and most of them of equal length. In decay, the *Volva* drops off, the *Pileus* becomes flat and smooth, and the gills turn black.

This is esteem'd the best and most savoury of the genus, and is the kind most usually brought to table in *England*.

It is eaten fresh either stew'd or boil'd, and preserv'd either pickled or pulveriz'd. And of its juice with salt and spices is made the sauce call'd *Catchup*.

The gardeners contrive to propagate this mushroom either from its seeds or roots, so as to produce them at all seasons of the year. To effect this they make beds like the ridge of a house, composed of alternate layers of horse-dung and earth, covered with litter. In the surface of these beds, when they have acquired a sufficient degree of heat, they either plant the
the

the *spawn* (as they call it) of the Mushrooms, that is, the white fibrous radicles found about their roots, (which produce tubercles in the manner of potatoes) or else they cut out the gills, and either sow them with the seeds in them, or infuse the gills in water, and sprinkle the infusion on the beds. Either method will succeed, but planting the spawn or radicles is the most usual practice.

In much the same manner, without doubt, any other species of *Fungus* may be cultivated, as experiments with the *Boletus* and *Pballus* have been already made with success.

violaceus 8. A. stipitatus, pileo rimoso, margine violaceo tomentoso, stipite cærulescente lana ferruginea. *Sp. pl.* 1641. (*Michel. gen.* t. 74. f. 1. Schæffer. *fung.* t. 3, 34, & 56. opt.)

Violet Agaric. *Anglis.*

In woods frequent. We observ'd it at *Blair* in *Atbol*, &c. IX. X.

The stalk is as thick as a man's thumb, bulbose at the base, solid, of a violet color, covered with a cobweb ferrugineous down.

The *Pileus* is hemispherical, from two to six inches in diameter, of a violet color, tawny in the center, the margin, when young, inflected and united to the stalk, with a ferrugineous cobweb

cobweb down. The gills are of a dull purple color. Both *Pileus* and gills in decay turn to a brownish color.

It is of a firm substance, and is eaten by the *Russians* and *Germans*.

cinnamomeus 9. A. stipitatus, pileo fordide flavo, lamellis luteo-ruffis. *Sp. pl.* 1642. (*Batarrae fung. t.* 15. *F?* *Schæf. fung. t.* 4?)

Cinnamon Agaric. *Anglis.*

In woods not unfrequent. IX.

The stalk is two or three inches high, solid, yellowish, and without a *Volva*.

The *Pileus* is cinnamon-color'd, at first convex, afterwards plane, except the centre, which is generally elevated, the rim acute.

The gills are of the same color as the *Pileus*, thinly set, and of a dry coriaceous substance.

This species may be readily distinguish'd by its cinnamon color.

equestris 10. A. stipitatus, pileo pallido, disco stellatim luteo, lamellis sulphureis. *Sp. pl.* 1642. (*Schæf. fung. t.* 79? *Sterb. t.* 21 *C?*)

Sulphur-gill'd, or starry Agaric. *Anglis.*

In dry pastures and woods. IX. X.

The stalk is yellow, smooth, and without a *Volva*.

The

The *Pileus* is convex, of a pale yellow colour, often mark'd in the centre with a kind of tawny star.

The gills are sulphur-colour'd, by which the species is readily known. It turns black in decay.

clypeatus A. stipitatus, pileo hemisphærico viscido acuminato, lamellis albis, stipite longo cylindrico albo. *Sp. pl.* 1642. (*Batarra. t.* 25. *E. Schæf. fung. t.* 52. *fig.* 7, 8, 9. *opt.*)

11.

Long-stalk'd shield Agaric. *Anglis.*

In woods and pastures. IX. X.

The stalk is cylindrical, smooth, fistular, about half a foot long, of the size of a small quill, and of a grey white color.

The *Pileus* is about two inches in diameter, shap'd like a shield, with an *umbo* or elevation in the centre, quite smooth, sometimes viscid, of a grey-brown or mouse color. The rim when full-grown a little elevated, and streak'd with radiated furrows.

The gills are white, turning grey with age.

The substance of the *Pileus* is brittle, and contains very little flesh.

coriaceus

12.

A stipitatus pileo et lamellis sordide albidis coriaceis. (*Schæf. fung. t.* 220. *et. fortassè. t.* 205, & 232.)

Little

Little Champignon or Fairy Agaric. *Anglis.*

In dry pastures, and frequently in those green circles of grass call'd *Fairy Rings*, suppos'd by the vulgar to be made by the dancing of *fairies*, but which many naturalists imagine to be occasioned by lightning, and some that they are caus'd by ants or other insects. IX. X.

The whole of this Agaric is of a dirty white color, the substance dry, with very little flesh, and in decay tough and leathern.

The stalk is about two inches high, remarkably tough, thickest at the top where it is inserted into the *Pileus*.

The *Pileus* is about the size of a half-crown piece, a little elevated or convex in the center.

The gills are alternately extended from the rim towards the stalk, but in general do not quite touch the latter. The intermediate ones are extended but half way.

The French call this Agaric *Mousseron*, and esteem it one of the best for the table.

finetarius A. stipitatus, pileo companulato lacero, lamellis
13. nigris lateraliter flexuosis, stipite fistuloso. *Sp.*
pl. 1643. (*Buxbaum. cent.* 4. *tab.* 27. *Sterb.*
fung. 218. *t.* 22. *fig.* I. K. L. *Michel. gen.* p. 181.
t. 80. *f.* 3. *Batarra. p.* 53, 54. *tab.* 26. A. B. C.
Schæf. fung. tab. 7 & 8. *opt. et varietates tab.*
46, 47, 100. *bene.*)

Egg Agaric. *Anglis.*

On dunghills, banks of ditches, in gardens, and waste places about towns and villages, after the autumnal rains, frequent. X.

It grows either single or in clusters.

The *Pileus*, at its first eruption out of the earth, appears sessile, and is of an oval form like an egg, imbricated with large, white, downy, ragged scales, the rim adhering to the stalk, so as to hide it entirely.

As the *Fungus* advances in its growth, the stalk attains to the height of five or six inches, and is fistular, downy, and white. The rim of the *Pileus* parts from it, and leaves behind a marginal ring, but no proper *Volva*. After this the *Pileus* becomes bell-shap'd and striated, and changes often to a grey or mouse color; the margin next becomes lacerated and reflex'd, and the whole speedily melts away into a black inky liquor.

The gills at first are very thin and deep, numerous, and crowded close together; white and mealy, with a slight tinge of red. In decay they turn black, and dissolve with the *Pileus*. The seeds are oval.

campanulatus 14. A. stipitatus, pileo campanulato striato pellucido, lamellis adscendentibus, stipite nudo. *Sp. pl.*

1643. (*Vaill. paris. 71. tab. 12. fig. 1, 2.*
Buxbaum. cent. 4. t. 13. f. 3. Schæffer. fung.
t. 32. & 211. opt. & ejus varietas. tab. 31.)

Little Bell Agaric. *Anglis.*

In woods, pastures, and upon rotten leaves.

IX. X.

The stalk is about four inches long, naked, smooth, fistular, like that of *Dandelion*, and either grey or mouse-colour'd.

The *Pileus* is obtusely conical or bell-shap'd, from one half to an inch in diameter, either grey, pale, mouse-color'd, or light-brown, deeply striated, thin, and pellucid.

The gills are grey, and almost black when old.

It is smaller than the *A. clypeatus*, of a thinner substance, and a more conical form, and has a striated *Pileus*, with grey or black gills.

plicatus 15. *A. stipitatus*, pileo ovato striato plicato cinereo, vertice lævi, stipite annulato fistuloso basi subulato. *an A. separatus?* *Lin. sp. pl. 1643.*
(Vaill. paris. p. 73. t. 12. f. 10, 11. bon. Michel.
gen. 189. t. 80. f. 5. Schæf. fung. t. 67, & 68.
opt. & ejus varietates, tab. 17, 66, 201, 216.

Pucker'd Agaric. *Anglis.*

On dunghills, and in churchyards, gardens, by the sides of walks, and in waste places near towns and villages frequent. IX. X.

It

It grows sometimes single, but more frequently in clusters, and speedily perishes.

The stalk is cylindrical, white, fistular, from three to six inches high or more, somewhat thick and solid at the base, ending with a taper root under ground. When young it is generally surrounded in the middle with a thin, membranaceous ring, which soon vanishes without leaving the least remains.

The *Pileus* when young is oval, striated, either of a grey or pale-brown color, the rim pucker'd and contracted around the stalk, the *vertex* tawny-brown and smooth. When full grown it becomes bell-shap'd, and in decay the rim is lacerated and folded back.

The gills (as in the other Agarics) are composed each of two membranes, and are very numerous, close, and remarkably broad or deep, so as to render the *Pileus* thick and heavy. They are all extended from the rim to the *vertex*, where they terminate so as to leave a vacant circle, in the centre of which the *apex* of the stalk is inserted, without being touch'd by the gills. The gills at first are covered with a hoary whiteness, which soon vanishes, and leaves them quite black. In decay, both gills and *Pileus* dissolve into an inky liquor full of seeds, which under the microscope appear to be spherical.

This

This Agaric is nearly related to the *A. fimetarius*, but we think it distinct.

anulatus 16. *A. stipitatus*, pileo campanulato subfusco squamato, lamellis albidis, stipite bulbofo anulato.
(*Schæff. fung. tab. 22. et 23. opt. et ejus varietates, tab. 18. et 19.*)

Ruffled Agaric. *Anglis.*

In woods and shady places. X.

The stalk is about six inches high, fistular, a finger thick, bulbous at the base, surrounded with a permanent membranaceous *Volva*, like a ruffle, and generally covered with downy scales of a whitish or a tawny color.

The *Pileus* is covered with pale brown or tawny scales; when young, is oval and has its rim contracted around the stalk, but when full grown is widely conical or bell-shaped, three or four inches in diameter, and striated near the margin.

The gills at first are white, but afterwards straw-colored, and lastly pale-brown.

The seeds are oval.

It is nearly allied to the *A. verrucosus*, but differs in color, and in being scaly and not warty.

aurantius 17. *A. stipitatus* pileo conico viscido aurantio, lamellis luteis, stipite nudo.—*an A. fragilis?* *Lin.*

U u u

Sp.

Sp. pl. 1643. (*Schæff. fung. tab. 2. opt.*)

Little Orange-color'd Agaric. *Anglis.*

In dry pastures. IX. X.

The stalk is fistular, often compress'd, two or three inches high, naked, smooth, and either of a yellow or orange color.

The *Pileus* is either conical, or else flat with an elevated *Umbo*, from one half to two inches in diameter, commonly orange-color'd, but frequently yellow or sulphur-color'd; smooth, and generally, but not always viscid or glutinous to the touch.

The gills are either yellow or orange-color'd.

It turns black in decay.

*umbellife-
rus* 18.

A. stipitatus, pileo plicato membranaceo, lamellis basi latioribus. *Sp. pl.* 1643.

(*Michel. gen.* 166. n. 3. *tab.* 80. f. 11. *opt.*)

Little delicate Umbrella Agaric. *Anglis.*

Upon rotten Leaves in Woods and shady Places.

XI.

This is a very small species, being only about an inch, or at most two inches high, very tender and quaking.

The stalk is white, of the size of a pin, and a little downy at the base.

The *Pileus* is white, membranaceous, bell-shap'd, plaited like an *umbrella*, about a quarter of an inch

inch in diameter, generally sprinkled with a white powder.

The gills are white, and but few in number.

androsaceus 19. AGARICUS stipitatus albus, pileo plicato membranaceo, stipite nigro. *Sp. pl.* 1644. (*Boccone mus. di piant.* p. 143. *tab.* 104. *Vaill. paris. tab.* 11. *fig.* 11. 21. et 23. *Batarrae, tab.* 28. 2. *Schæffer. fung. tab.* 239. *opt.*)

Little black-stalk'd Agaric. *Anglis.*

Upon old sticks, rotten leaves, and among mosses. X.—XII.

The stalk is about an inch high, of the size of a pin, stiff and firm, and black towards the base.

The *Pileus* is about a quarter of an inch, sometimes half an inch in diameter, white, almost flat, plaited on the rim, of a dry thin tough substance, without Flesh.

The gills are white and short. The seeds sphaerical.

clavus 20. A. stipitatus, pileo luteo convexo striato, lamellis stipiteque albis. (*Sp. pl.* 1644. (*Vaill. paris. 76. tab.* 11. *fig.* 19. 20. *Schæffer. t.* 222. *bon.*)

Pin-headed Agaric. *Anglis.*

Upon decay'd leaves, and among mosses. IX.—XII.

It is very small, and scarcely an inch high,

The stalk is generally a little crooked ; of the size of a pin, fistular, brittle, and either whitish or straw-color'd.

The *Pileus* is about the size of a pin's head, sometimes a little bigger, convex, the rim contracted around the stalk, and either of a yellow or orange color.

The gills are but very few in number ; and either white or yellow.

** *Parasitici, acaules, dimidiati.*

quercinus
21.

A. acaulis, lamellis labyrinthiformibus, *Sp. pl.* 164. (*Buxbaum. Cent. 5. t. 4. f. 1. mala. Vaill. paris. p. 3. tab. 1. fig. 1. 2. Batarra. p. 72. tab. 38. fig. A. Schæffer. fung. tab. 57. opt.*)

Oak Agaric. *Anglis.*

Upon the trunks of various trees and dry decay'd wood frequent, all the year round.

The substance of this is dry, tough, and coriaceous ; the color throughout a pale yellowish brown, like that of a cork, which it also greatly resembles in its internal substance.

It is of a semicircular figure, six or eight inches wide, one or two thick, and grows on to the trunks of trees sessile and horizontal.

The upper surface is uneven, being imbricated with tough scales lying over one another, so

as to form concentric arches or waves near the rim.

The gills are thick, deep, coriaceous, and branched, many of them running into one another, and forming various sinuses or labyrinths.

The rim of the *Pileus* is often divided into lobes, and the base or centre is sometimes imbricated with smaller samples of the same species.

It is perennial in its nature, and never fades.

When thoroughly beaten with a hammer, it makes excellent touchwood or tinder.

alneus 22. *A. acaulis, lamellis bifidis pulverulentis. Sp. pl.*
1645. (*Buxbaum. Cent. 5. tab. 7. f. 1. Ba-*
tarra. p. 73. tab. 38. fig. f. d.)

Alder Agaric. *Anglis.*

Upon the trunks of trees, and dead wood. XI.
and III.

It is shaped like the sector of a circle, or the shell of a bivalve, about half an inch, seldom an inch in the *Radius*. The substance dry and coriaceous.

It grows either horizontal, or flat, with the gills downwards.

The upper surface is convex, and covered with a woolly down either of a white or grey color.

The gills are grey or lead-color'd, covered with a short down, visible with a microscope, and

U u u 3

each

each of them divided into two thick open *Laminæ*, in the fissure of which the seeds are sometimes visible.

semipetiolatus 23. *A. subacaulis lævis albidus, lamellis simplicibus pallide fuscis.*—*Vaill. paris. t. 10. f. 7. et fortasse Michel. gen. t. 65. fig. 6. et 7. Buxbaum. Cent. 5. t. 10. f. 1. 2. an Agaricus niveus? Jaquin. Fl. Austriac. t. 288.)*

Short-stalk'd Agaric. *Anglis.*

Upon the trunks of fallen trees and decay'd timber. XI.

It grows horizontal, sometimes single, but generally several together lying over one another, of a dry leathern substance, a smooth surface, and either a white or pale yellowish color.

The *Pileus* is about three quarters of a circle in circumference, and generally about an inch in diameter, sometimes sessile, but most commonly furnished with a short spurious footstalk inserted laterally into the *Pileus*, on the defective side of its circumference.

The gills are numerous and fine, usually of a pale brown color, sometimes decurrent.

BOLETUS. *Gen. pl.* 1210.

FUNGUS horizontalis, subtus porosus.

* *Parasitici acaules.**tenax* 1.BOLETUS acaulis suberosus imbricatus flavus
lævis, poris minutis teretibus. (*Schæf. fung.*
t. 131. *et* 132. *opt.*)Tough Boletus. *Anglis.*

Upon trunks of hollow trees. V. and IX.

This is generally of a pale yellow or a buff color,
and of a thick tough elastic substance, like
cork.It grows sessile and horizontal to the trunks of
trees, appearing at first like a yellow knobbed
irregular lump, as big as a man's fist, which
afterwards unfolds itself into an imbricated mass
of thick lobes, arched and sinuated on the
margins, convex above and below, the surface
smooth but uneven.The under side is yellow and full of small round
pores.The seeds are sphaerical, and lodged in the pores
like a fine powder.This *Fungus* often forms a clump as big as a man's
head,*suberosus* 2. B. acaulis pulvinatus albus lævis, poris acutis dif-
formibus. *Sp. pl.* 1645. (*Fig. nulla fidenda.*)

U u u 4

White

White Cork Boletus. *Anglis.*

Upon the trunks of birch and willow trees, continuing the whole year.

It grows sessile and horizontal; its figure semicircular; the upper side convex, the under nearly plain, of various sizes, from that of an ass's hoof to a peck-measure.

The upper surface is quite white, generally covered with a short spongy down, but sometimes smooth.

The pores are of a tawny or yellow color, sometimes whitish, deep, and angular for the most part, like the cells in a honey-comb, but in other specimens round or waved.

The flesh or internal substance is thick, white, tough, light and spongy, like cork, and is sometimes cut and shaped by the country people, and used as corks for their bottles, but must not be suffered to touch any liquid, for moisture soon renders them soft and useless.

cellulosus 3. B. acaulis squamosus subflavus, poris amplissimis quadrangularibus albidis.—(Schæffer. *fung. t.* 101. et 102. opt. *Sterb. fung. t.* 13. et 14. A. B. C. D. E. F. G. *bon.*)

Honey-comb Boletus. *Anglis.*

On the trunks of the ash, beech, and other trees.

V.—VII.

The

The color of this is generally either tawny or pale brown, the substance soft and spongy.

It grows sessile and horizontal for the most part, but is sometimes furnished with a short thick irregular footstalk. Its figure is very variable, but is most usually semicircular, with a waved rim, and grows either single, or many together lying over each other. The upper surface is either convex or flat, from four inches to a foot or more in width, and covered with brown reflex'd scales. The under side is full of large white or cream-color'd quadrangular pores, with waved margins.

It does not seem to be describ'd by *Linnaeus*.

Spongiosus B. acaulis villosus fuscus, poris albidis ciliatis angularibus. (*Fig. nulla.*)

4.

Spongy Boletus. *Anglis.*

On the trunks of trees. VII.

It grows sessile and horizontal; the margin semicircular, the upper side convex, and covered with dark brown woolly hairs; the under side nearly plain; generally white or cream-colored, and full of angular downy or ciliated pores. It grows to a prodigious size, sometimes as big as a peck-measure, and is of a soft spongy substance.

B. acaulis

hepaticus 5. *B. acaulis lævis carnosus sanguineus mollis, obscure lobatus. Raii. syn. p. 23. n. 12. Haller. Helvet. hist. n. 2315. (Michel. gen. p. 117. tab. 60. Schæff. fung. tab. 119. opt. et ejus varietates tab. 116. 117. 118. et 120. bon.)*

Liver Boletus. *Anglis.*

On the trunks of hollow trees. VIII. IX.

It is of a soft thick fleshy substance and dark red color, so extremely like a piece of a bullock's liver, that it may be readily known only from that circumstance.

It grows sessile, and is obscurely lobed on the margin. The upper surface is smooth and convex, the skin a little striated, the flesh is succulent and replete with a purple juice. The under side is gibbous and full of long cylindrical tubes with pale yellow mouths.

Both the skin and the whole mass of tubes may be easily separated from the fleshy part.

It is a curious Fungus, and, according to *Haller*, is of the eatable kind.

igniarius 6. *B. acaulis pulvinatus lævis, poris tenuissimis. Sp. pl. 1645. (Michel. gen. tab. 61. f. 1? Batarra. p. 71. tab. 37. fig. E. Schæffer. fung. tab. 137. opt. et ejus varietates, tab. 106. 136. 138. 262, et 263.)*

Touchwood Boletus. *Anglis.*

Upon

Upon the trunks of old trees frequent, at all seasons of the year.

It grows sessile and horizontal, and consists of a very hard woody substance, in shape like a horse's hoof, of various sizes, from a man's fist to that of his head, or larger.

The upper side is smooth but uneven, distinguished near the rim by elevated zones of different colors, brown, grey, tawny, &c.

The under side is plain, either white or yellowish, and full of very minute pores, which turn brown with age. The seeds are oval.

The flesh or substance within is of a tawny brown color, extremely hard and tough.

It varies greatly in color, surface, thickness, and degree of hardness; whence some authors have made many species, but *Linnaeus* comprehends them all under one.

An excellent touchwood is made from this *Fungus*, by first paring off the upper rind, then boiling the remainder in lye, and afterwards drying and pounding it with a hammer; or else only pounding and boiling it up with salt-petre.

The same *Fungus* beaten out into soft square pieces is well known to the surgeons by the name of *Agaric*, and has been much celebrated for stopping the bleeding of the arteries in amputations

tations and wounds. It has not however proved altogether successful, unless in the smaller vessels.

We are inform'd by *Gleditch*, that in *Franconia*, a circle of *Germany*, he had seen these beaten pieces of *Boletus*, which resemble the softest leather, curiously sew'd together and made into garments. *Gled. fung. p. 79.*

versicolor 7. *B. acaulis fasciis discoloribus poris albis. Sp. pl. 1645. (Sterbeck. t. 27, K. Batarra. t. 35. et 34. B. Schæffer. t. 268. opt. et ejus varietates, t. 267. et 269.)*

Variegated or striped *Boletus. Anglis.*

Upon the trunks of old trees, and decayed wood frequent. XI.—III.

It grows horizontally in imbricated clusters. Its figure is nearly semielliptic and flat, with an undulated margin. Its substance white, dry, and coriaceous, the upper side downy and striped with concentric zones of various colors. The predominant color is generally green, but often intercepted with concentric stripes of yellow, tawny, reddish brown, and bluish colors. Sometimes it occurs totally green, yellow, or grey, without any stripes at all.

The under side is white, and when old a pale yellowish brown.

The

The pores are small, unequal, and lacerated, wearing out by age, and leaving behind a kind of naked gills.

albus 8. B. acaulis pulvinatus lævis, poris oblongis et rotundis. *Huds. Ang.* 496. n. 4. an BOLETUS *suaveolens*? *Lin. Sp. pl.* 1646. n. 7. (*Fig. nulla fidenda.*)

White Boletus. *Anglis.*

Upon the trunks of old willow trees, in a wood near *Laswade*. Dr. *Parsons*.

It grows sessile and horizontal; the margin semicircular and waved; the substance thick, white, dry, hard, and tough, like cork.

The upper surface is convex, smooth, and white, often ting'd with red, especially about that part which adheres to the trunk.

The under side is of a pale yellowish brown color.

The pores are various. Some of them round or angular, others long like parallelograms, deep, and resembling gills closed at both ends.

The *Pileus* varies from three to eight inches or more in diameter.

We suspect this species to be the same with the Boletus *suaveolens*. *Lin.* though ours has very little smell. If it be so, it is the kind which that author informs us the *Lapland* beaux carry
in

in their pouches by way of perfume, and to render their persons agreeable to their mistresses.

** *Stipitati.*

luteus 9. B. stipitatus, pileo pulvinato subviscido, poris rotundatis convexis flavissimis, stipite albido. *Sp. pl.* 1646. (*Buxbaum. Cent.* 5. *t.* 14. *Schæf. fung. t.* 114. *et* 123. *opt.*)

Yellow Boletus. *Anglis.*

In woods and pastures. X.

The stalk is solid, about two inches high, a finger thick, of a dirty white, pale brown, or yellowish color, sometimes reddish towards the top, and when young, surrounded with a brown membranaceous ring.

The *Pileus* is soft and convex, about an inch and half or two inches in diameter, commonly viscid when young; the upper side of a yellowish brown, a tawny, or a fuscous color.

The under side is bright yellow, without the least tinge of green. The pores are equal, round, and large; their margins lacerated and reflexed.

The flesh is thick, soft, and spongy, and when bruised or wounded turns of a bluish color. It also readily separates from the mass of pores or tubes.

The

The seeds are oval and yellow.

bovinus 10. *B. stipitatus*, pileo glabro pulvinato marginato, poris compositis acutis, porulis angulatis brevioribus. *Sp. pl.* 1646. (*Michel, gen. p.* 127. *tab.* 68. *et* 69. *Batarra. p.* 63. *t.* 30. A. B. *Schæffer. fung. t.* 105. 1030. *et* 134. *opt. et ejus varietates*, 103. 104. 107. 112. 133. *omnes opt.*)

Brown Boletus. Cow Boletus. *Anglis.*

Bonaid-an-lofgainn. *Gaulis.*

In woods and pastures frequent. VIII. IX.

This is nearly ally'd to the preceding, but differs from it in the following respects.

It appears earlier in the autumn.

The stalk, when young, is either bulbous at the base, or tumid above it, commonly reticulated with red or brown lines, and destitute of the membranaceous ring or *volva*.

The *Pileus* is smooth, with an acute deflex'd margin.

The pores are angular, compounded of bundles of less and shorter ones, either of a whitish grey, or a yellow color, ting'd with green.

The seeds are oval and green. To these more certain characters may be added the following vague ones.—The stalk is as thick again, often four times as thick as that of the foregoing.

The

The *Pileus* is parabolic when young, when full grown five or six inches or more in diameter, and generally of a brown color.

It is found also of a tawny, a yellowish-brown, a reddish-brown, a deep red-purple, and a greenish-brown color. The flesh yellow, white, or reddish.

β. Sometimes it varies with a brown *Pileus*, reticulated with white or yellowish lines, as figured by *Schæffer*, t. 108. & 135.

Reticulated Boletus. *Anglis.*

The young plants are eaten in *Italy*, and esteemed a great delicacy. The *Germans* also receive them as a dainty, under the name of *Gombas* and *Brat-Bülz*.

Cows, deer, sheep, and swine will feed upon this and other *Boleti*, and are sometimes greatly disordered by them.

In cows and other cattle they have been known to create bloody urine, nauseous milk, swellings of the *abdomen*, inflammations in the bowels, stoppages, diarrhœas, and death.

In sheep they bring on a scirrhus liver, a cough, a general wasting, and dropsy.

Hence it is obvious, how cautious men ought to be in the use of them.

Scarabs, *Dermestes*, and many other insects feed upon and breed in them in abundance, and doubtless

doubtless it is their proper food. It is pity men, or other animals, should rob them of it.

HYDNUM. *Gen. pl.* 1211.

Fungus horizontalis, subtus echinatus.

repandum 1. HYDNUM stipitatum pileo convexo lævi flexuoso. *Sp. pl.* 1647. (*Michel. gen.* 132. *t.* 72. *f.* 3. *Vaill. paris. t.* 14. *f.* 6, 7, 8. *quoad fig. Oeder. Dan.* 310. *bona. Schæffer. fung. t.* 141. *opt.*)

Yellow smooth Hydnum. *Anglis.*

In woods not unfrequent. We observ'd it at *Bellmont*, the seat of the honourable Mr. *Stewart Mackenzie*, in the county of *Angus*. X.

The substance of this is dry, fleshy, and breaks short; the color a pale yellow.

The stalk is about two inches high, a finger thick, solid, biggest at the base, of a whitish or pale-yellow color, with white pustules near the top.

The *Pileus* is of a pale-yellow color, smooth on the upper side, convex, about three inches in diameter, the margin deflex'd, sometimes intire, but generally waved or lobed irregularly.

The under side is echinated, according to the character of the *genus*; the prickles of a pale-yellow color. The seeds sphaerical.

X x x

It

It grows either single, or two or three from the same base.

The flesh, when broken, is white, and esteemed to be of the eatable kind.

auriscal- H. stipitatum, pileo dimidiato. *Sp. pl.* 1648.
pium 2. (*Buxbaum. cent.* 1. *t.* 57. *f.* 1. *Michel. gen.* 132.
t. 72. *f.* 8. *Rose's Elements of Botany, tab.* 3.
f. 2. *b.* *Schæffer. fung. t.* 143. *opt.*)

Little Hough or Scraper Hydnum. *Anglis.*

It grows upon old rotten cones, and decayed branches of the fir-tree, lying half buried in the ground, at *Blair* in *Atbol*, and in the pine forests. X.

The substance of this is dry and coriaceous; the color generally a tawny-brown; the height from one to two inches.

The stalk is slender, somewhat bulbous or thickest at the base, gradually tapering towards the top, covered with fuscous downy hairs, and generally inserted on one side of the *Pileus*, but sometimes in its centre.

The *Pileus* is most commonly semicircular, or kidney-shap'd, sometimes completely circular, about half an inch in diameter, convex on the upper side, having sometimes an elevated *umbo* in the centre, and usually covered with downy hairs of a tawny-brown color, but is sometimes smooth, and almost black.

The

The prickles on the under side are very small and numerous, and of a grey or whitish color.

The seeds, when magnified, appear perfectly sphaerical.

PHALLUS. *Gen. pl.* 1212.

Fungus supra reticulatus, subtus lævis.

esculentus 1. PHALLUS pileo ovato celluloso, stipite nudo rugoso. *Sp. pl.* 1648. (*Fungus favaginosus. Ger. emac. pag.* 1583. *Sterb. fung. tab.* 10. *bon. Michel. gen. p.* 203. *t.* 84 & 85. *Batarrae. fung. t.* 2. *fig.* H. *Oeder. Dan. t.* 53. *bon. Schæffer. t.* 199, 298, 299, 300. *opt.*)

Esculent Morel. *Anglis.*

In woods, in the spring season, not unfrequent, as at *Blair* in *Atbol*, in the woods at *Langholm* in *Eskdale*, and in *Logton* wood near *Dalkeith*, &c. V.

The substance, when recent, is wax-like and friable. The color a whitish-yellow, turning brownish in decay. The height of the whole Fungus about four or five inches.

The stalk is thick and clumsy, somewhat tuberous at the base, and hollow in the middle.

The *Pileus* is either round or conical, at a medium about the size of an egg, often much larger, hollow within, its base united to the stalk, and its surface cellular, or latticed with irregular sinuses.

The magnified seeds are oval.

It is much esteem'd at table both recent and dry'd, being commonly used as an ingredient to heighten the flavour of ragouts.

We are inform'd by *Gleditch*, that *Morels* are observ'd to grow in the woods of *Germany* in the greatest plenty, in those places where charcoal has been made. Hence the good women who collect them to sell, receiving a hint how to encourage their growth, have been accustomed to make fires in certain places of the woods, with heath, broom, *Vaccinium*, and other materials, in order to obtain a more plentiful crop. This strange method of cultivating *Morels*, being however sometimes attended with dreadful consequences, large woods having been set on fire and destroy'd by it, the magistrate thought fit to interpose his authority, and the practice is now interdicted.

impudicus P. volvatus stipitatus, pileo celluloso. *Sp. pl.*
2. 1648. (*Fungus virilis penis effigie. Ger. emac. pag. 1583. Sterbeck. t. 30. A.—M. Michel. gen. p. 201. t. 83. Batarra. tab. 2. f. A. Oeder. Dan. t. 175. Schæffer. t. 196, 197, et 198. opt.*)

Stinking Morel. Stinkhorns. *Anglis.*

In woods and on banks, but not common. In the woods at *Blair* in *Atbol*. In the sands by the sea-side on both sides of the *Forth*, and at *Carubber* bank, among Planting. *Sibbald*.
VIII.

It arises from the earth under a veil or *volva*, shap'd exactly like a hen's egg, and of the same color, having a long fibrous radicle at its base.

This egg-like *Valva* is composed of two coats or membranes, the space between which is full of a thick, viscid, transparent matter, which, when dry, glues the coats together, and shines like varnish.

In the next stage of growth, the *Volva* suddenly bursts into several lacerated permanent segments, from the centre of which arises an erect, white, cellular, hollow stalk, about five or six inches high, and one thick, of a wax-like friable substance, and most foetid cadaverous smell, conic at each end, the base inserted in a white, concave, membranaceous turbinate cup, and the summit capp'd with a hollow, conical *Pileus*, an inch long, having a reticulated cellular surface, its base detach'd from the stalk, and its summit umbilicated, the *umbilicus* sometimes perforated and sometimes closed. The under side of this *Pileus*

is covered with a clear, viscid, gelatinous matter, similar to that found between the membranes of the *Volva*; and under this viscid matter, concealed in reticulated receptacles, are found the seeds, which when magnified appear sphaerical.

As soon as the *Volva* bursts, the plant begins to diffuse its intolerable odours, which are so powerful and widely expanded, that the *Fungus* may be readily discovered by the scent only, before it appears to the sight. At this time, the viscid matter between the coats of the *Volva* grows turbid and fuscous; and when the plant attains its full maturity, the clear viscid substance in the *Pileus* becomes gradually discolored, putrid, and extremely foetid, and soon afterwards turns blackish, and, together with the seeds and internal part of the *Pileus* itself, melts away.

The foetid smell then begins to remit, the *Fungus* fades, and continues for a short time sapless and coriaceous, and at last becomes the food of worms.

The cadaverous scent of this *Fungus* greatly allures the flies, which lighting upon the *Pileus*, are entrapp'd in the viscid matter, and perish.

We are inform'd by *Gleditch*, that the vulgar people in *Thuringia* call the unopen'd *Volva* by the

the ridiculous name of *Ghost's*, and *Dæmon's Eggs*, and that they collect and dry them either in the smoke or open air, and when reduced to powder, use them in a glass of spirits as an *aphrodisiac*.

HELVELLA. *Gen. pl.* 1214.

Fungus turbinatus.

mitra 1. *H. pileo deflexo adnato lobato difformi. Sp. pl.*
1649. (*Michel. gen. t.* 86. *f.* 7. *Jussieu. Act. Acad. Paris. A.* 1728. *II. p.* 380. *t.* 15. *bene. Batarra. t. II. f.* G. *Schæffer. t.* 154, 162, and 282. *opt.*)

Curled Helvella. *Anglis.*

In woods, not unfrequent in the autumn, and sometimes in spring.

The stalk is two or three inches high, a finger thick or more, irregular, hollow, deeply furrowed, often full of holes or sinuses, and generally of a white color.

The *Pileus* is deflex'd, and commonly divided into curled or folded lobes, which adhere to the stalk, but is extremely irregular and variable, and has neither gills nor pores.

Its color is generally a yellowish-white, sometimes fuscous, livid, or black-purple. The substance is wax-like and friable, the surface soft like satin. The seeds oval.

X x x 4

It

β. It often varies with an intire cylindrical stalk, without furrows or finuses. See *Michel. gen. t. 86. f. 8, 9. Schæff. t. 159, 160, 161, et 283. opt.*)

It is nearly ally'd to the *Phallus esculentus*, and like that is esteem'd to be of the eatable kind.

PEZIZA. *Gen. pl. 1215.*

Fungus campanulatus sessilis.

lentifera 1. *P. campanulata lentifera. Sp. pl. 1649. (Loescl. Flor. Pruss. t. 16. fig. superior. Michel. gen. t. 102. f. 1. Vaill. paris. t. 11. fig. 6, 7. Batarra. t. III. f. 1. k. Oeder. Dan. t. 469. fig. superior. Schæffer. t. 180. opt.)*

Black feeding *Peziza. Anglis.*

Upon old decaying timber, upon sticks and straws, and sometimes upon the ground, early in the spring, and late in the autumn.

It is about half an inch high, of a hollow, inverted, conical form, and dry coriaceous substance; the outside at first downy, afterwards smooth and blackish, the inside grey.

The whole Fungus performs the office of a common calyx, in the cavity of which are placed upon one another several grey, circular, compress'd or lenticular receptacles, each of them affix'd to the side of the cup by a central thread issuing from the under part.

Each

Each of these receptacles is full of a gelatinous substance, in which are immers'd numerous small round seeds.

striata 2. *P. campanulata lentifera extùs hirsuta, intùs striata.*—Var. β . *lentifera.* *Sp. pl.* 1650. (*Loesel. Fl. Pruss. t. 16. fig. inferior. Michel. gen. t. 102. f. 2. Vaill. Paris. t. 11. f. 4, 5. bon. Schæffer. t. 178. opt.*)

Striated feeding *Peziza.* *Anglis.*

In the like places with the preceding, and at the same time.

This differs from the last, in being cover'd on the outside with a fuscous hairy down, and having the inside longitudinally streak'd from bottom to top.

crucibuliformis 3. *P. crucibuliformis lentifera glabra sublutea.*—*Michel. gen. t. 102. f. 3. Oeder. Dan. t. 105. Schæffer. fung. t. 179. et 181. opt.*)

Crucible feeding *Peziza.* *Anglis.*

Upon decay'd timber in autumn and winter.

This is less and shorter than the two preceding, shap'd like a crucible, smooth on both sides without hairs or streaks, of a pale-yellow color, the lenticular feed-vessels white.

This and the two foregoing are cover'd in their infancy, or clos'd at the top with downy *opercula,*

cula, which, as the plants advance to maturity, soon open and fall off.

punctata 4. *P. turbinata truncata, disco punctato. Sp. pl.*
1650. (*Boccon. mus. 2. p. 25. tab. 107. Oeder.*
Dan. t. 288. opt.)

Dotted *Peziza. Anglis.*

Upon old horse-dung and cow-dung, in the spring and autumn.

It is shap'd like a top, with a flat head, about a quarter of an inch in diameter, full of small black dots or pores, through which the seeds when ripe are projected.

The substance of this species is hard and dry, the color white.

Haller ranks it under a new genus, which he terms *Sphæria. Hist. Helvet. n. 2184.* and *Gleditch* calls it an *Elvela. Method. fung. p. 44. n. 7.*

cornucopioi- *P. infundibuliformis, disco patente sinuato punctato. Sp. pl. 1650. (Michel. gen. t. 82. f. 5, des. 5. 6, 7. Vaill. Paris. t. 13. fig. 2, 3. bon. Oed. Dan. t. 384. pulchrè. Schæffer. fung. t. 165, et 166. opt.)*

Cornucopia *Peziza. Anglis.*

In woods not unfrequent. X.

This

This is shap'd like a funnel, or the horn of plenty, commonly about three inches high, the mouth one or two inches wide, the margin folded back, and frequently lobed or sinuated.

The outside is of a blackish color, with a tinge of blue or violet, and mark'd with swelling veins. The inside is fuscous, and covered with numerous, small, dark-brown warts or dots, in which are lodged minute, oval, or sphaerical seeds.

The substance of this *Fungus* is membranaceous and leathern.

They grow either single, or several from the same base.

cochleata 6. *P. turbinata cochleata. Sp. pl. 1651. Vaill. Paris. t. 11. f. 8. Schæffer. fung. t. 150, 155, 156, et 274. omnes opt. et fortasse var. t. 280.*

Wreathed or cockled *Peziza. Anglis.*

In woods, upon the ground, and about the roots of trees. X. XI.

The substance of this is semipellucid and cartilaginous, but yet easily broken and friable. The color brown, sometimes yellowish-brown, externally covered with a fine white, bloom-like powder. The height one or two inches. The shape extremely various.

It

It grows sessile, and generally in clusters, commonly of a concave or funnel-shap'd form, the lateral edges a little coil'd inwardly and perpendicularly, and the margin erect and sinuated.

Sometimes it is shaped like a faucer, a spoon, or an ear; but is always, so far as we have seen, destitute of veins, and smooth on both sides. The seeds are sphaerical.

It has been observ'd to be endu'd with an internal elastic motion, empowering it to project, when rubbed or irritated by the finger, to the height of some inches, a subtle powder like smoke. It is probable that others of this genus are possessed, at certain seasons, of the same quality.

cyathoides P. cyathiformis, margine obtuso erecto. *Sp. pl.*
7. 1651. (*Sterb. fung. p. 241, 242. C. D. tab. 26.*
in medio ad dextram. Schæffer. fung. tab. 148.
bon.)

Smooth scarlet *Peziza. Anglis.*

It is found upon rotten sticks, and sometimes upon the ground, on ditch-banks in shady places. III. and X. XI.

It grows sessile, and is concave like a faucer, smooth on both sides, the outside orange-color'd, and sometimes whitish, the inside bright-scarlet or carmine.

It

It varies much in size and figure, being found from a quarter of an inch to two inches in diameter, sometimes almost flat, other times waved or sinuated on the margins, and now-and-then supported on a very short coriaceous footstalk.

The substance is waxen and friable.

We believe the kind mentioned by Ray, under

- β. the name of *Peziza lutea parva, marginibus lævibus*. (*R. Synop. p. 18. n. 1. and tab. 24. fig. 4. opposite pag. 479.*) to be only a small yellow variety of that we have just describ'd.

Scutellata 8. *P. plana, margine convexo piloso. Sp. pl. 1651. (Michel. gen. p. 207. t. 86. f. 19. et fortassè fig. 17. Raii synopsis. pag. 18. n. 7. et tab. 24. f. 3. apud pag. 479. bona. Vaill. Paris. tab. 1—3. f. 13, 14, &c. bona. Oeder. Dan. tab. 469. n. 3. nomine falso. Schæffer. fungi, t. 284. opt.)*

Hairy-edged *Peziza. Anglis.*

On rotten wood, and old cow-dung, in spring and autumn.

It is circular and sessile, and either flat or slightly concave, about a quarter of an inch in diameter, generally of a scarlet color, the outside hairy, and the margin ciliated with brown or black erect hairs, the inside smooth.

When young, the mouth of the plant is clos'd,
fo

so as to give it a cylindrical or sphærical form, and is covered all over with short brown or whitish hairs, and when old it becomes concave and ciliated as before-mentioned, the disc sometimes sprinkled with minute greenish dots. It varies of a yellow and a brownish color, and sometimes with a naked margin destitute of hairs.

auricula 9. *P. concava rugosa auriformis.* *Lin. syst. nat. edit. 13. pag. 823. Tremella auricula, Sp. pl. 1625. (Ger. emac. 1481. ad summum tabulæ. Sterbeck. pag. 256. tab. 27. fig. H. H. Michel. t. 66. f. 1. Blackwell. t. 334. Batarra. t. 3. F.)*

Eared *Peziza*, or Jews Ears. *Anglis.*

It grows upon the bark of old decay'd trees, particularly upon the elder. X. XI.

The substance of this is a quaking gelatinous membrane, which when dry becomes hard.

The color is dark fuscous, like a bat's wing.

It grows sessile, either single or in clusters, shaped sometimes like a faucer, other times like a man's ear, wrinkled with large swelling veins, the under side covered with a hoary velvet down, the inside smooth and darker-color'd.

An infusion or decoction of this fungus in water, milk,

milk, or vinegar, was formerly recommended as a gargarism in quincies and sore throats, but it is seldom used in the present practice.

polymorpha P. turbinata, primum cava, deindè plana seu convexa, externè rugosa.—*Haller. Helvet. tom. III. pag. 116. tab. 48. fig. 8. an. n. 2219? Oeder Dan. t. 464. Schæffer. fung. tab. 158. opt.)*

Black fuscous *Peziza. Anglis.*

On the trunks of trees in November.

Its substance, when recent, is soft, pulpy, and gelatinous, but hard when dry. Its color on the upper side black, on the under side fuscous.

It grows either single or in clusters, its most usual figure turbinated, having at first a concave top, black and smooth within, which afterwards fills up, so that the summit of the fungus becomes flat or truncated, and sometimes even convex, the rim being a little depress'd and undulated. The outside is fuscous, transversely wrinkled, soft and velvety.

Its height and thickness is about half an inch, sometimes twice as much, for it varies greatly both in size and figure, but may be always known by its substance and color.

CLAVARIA.

CLAVARIA. *Gen. pl.* 1216.*Fungus lævis oblongus.** *Indivisæ.*

pistilaris 1. *C. clavæformis simplicissima. Sp. pl.* 1651. *Michel. gen. tab.* 87. *fig.* 9, 6, 7, 5, 10, 11. *Vaill. Paris. tab.* 7. *f.* 5. *Schæffer. fung. t.* 171.

Single obtuse Clavaria. *Anglis.*

In woods, not unfrequent in October and November, amongst moss.

It is a simple club-shap'd body, from one to three inches high, of a friable substance like suet, and of a yellow or straw color, growing either single, or several from the same base, commonly about the size of a crow-quill, but very variable. It parts lengthways into fungous threads or fibres.

herculeana 2. *C. clavæformis simplicissima crassissima luteo-fusca rugosa, vertice depressio.—Gledit. fung. pag.* 28. *Ec. Haller. Helvet. n.* 2204. (*Michel. gen. t.* 87. *fig.* 1, 2, 3. *Schæff. fung. tab.* 169. *bon. Ec. ejus varietas. tab.* 290.

Great Club Clavaria. *Anglis.*

In shady woods. X. XI.

This is about four inches high, shap'd like a fig or *Hercules's* club, of a yellowish-brown color, a some-

a somewhat leathern and spongy substance, longitudinally wrinkled on the surface, and covered with a bloom-like powder. The seeds are oval.

It grows single, and when old it becomes hollow; the head truncated or depress'd.

Linnaeus considers it as a variety of the preceding; but its substance, habit, color, and size, seem to indicate it a distinct species, and we have the respectable name of *Haller* to countenance us in this opinion.

vermiculata 3. C. lumbriciformis ochrolenca.—*Gledit. fung. pag.* 30. n. II. *Haller. Helvet. n.* 2202. *Scopol. Carniol. n.* 1623. edit. 2. *Michel. gen. tab.* 87. f. 12, 13. et ejus varietas. *Vaill. Par. t.* 8. f. 2.)

Single taper Clavaria. *Anglis.*

In woods and pastures in the autumn.

It is about two inches high, generally thickest in the middle, and taper at the ends; often longitudinally wrinkled; of a yellow or straw color, and a suet-like friable substance.

It grows either single or in clusters, and is sometimes, but very rarely, divided or forked.

β. A variety of this, (or perhaps a distinct species) was communicated to us by Dr. *Parsons*, growing out of the branch of a living tree.

Y y y

It is about a quarter of an inch long, of a subulate compressed figure, simple and unbranched, of a yellow color, and when dry of a horny substance, the internal part solid and uniform.

Its growing upon wood seems to indicate it a distinct kind.

opbioglossoides 4. C. clavata integerrima compressa. Sp. pl. 1652.
(Vaill. Par. t. 7. f. 3. bon.)

Black Club Clavaria. *Anglis.*

Upon bogs frequent. X.

This is readily known by its black color. It is one or two inches high, and club-shap'd; the club generally a little compress'd and furrow'd, and hollow within.

**** *Ramosæ.***

digitata 5. C. ramosa lignea nigra. Sp. pl. 1652. (BRUKMAN
in disp. et cent. II. tab. 9. cum multis varietatibus.
Michel. gen. tab. 54. f. 4, 5. et tab. 55. f. 2.)

Black-finger'd Clavaria. *Anglis.*

Upon the rotten stumps of old trees, in woods and shady places. XI.

It is rais'd upon a footstalk, and altogether is generally about two or three inches high; sometimes single, but most commonly divided irregularly into two, three, or more oblong, blunt,

blunt, knobbed segments, often as thick as a man's finger, but most usually of the size and figure of a *Spadix* or catkin of *Long Pepper*.

The outer coat of it is black and granulated, being compos'd of numerous perforated hollow spherules, full of a charcoal-like powder.

The internal substance is white, of the density of soft wood or cork.

Haller ranks it under a new genus, which he terms *Sphæria*. *Helvet. hist. n.* 2193. and Scopoli, under another, denominated *Valsa*. *Scop. Flor. Carniol. n.* 1414.

hypoxylon 6. *C. ramofo-cornuta compressa. Sp. pl.* 1652. *Michel. gen. tab.* 55. *fig. C. C. C. Ord. 1. bon. et ejus radices, secundum Hallerum et alios. Michel. gen. tab.* 66. *f. 3. Plante nouvelle* Dodart. *Journal des Savans ann.* 1675. *Anc. Mem. T. X. p.* 557. *t. 4. fig. 3.)*

Flat horned Clavaria. *Anglis.*

Upon rotten trunks and stumps of trees frequent.

XI.—III.

The substance mentioned by Ray, under the name of *Fungus niger compressus, varie divaricatus et implexus inter lignum et corticem. R. Syn. pag.* 15. *n. 9.* and figured by *Micheli, tab.* 66. *f. 3.* is supposed by Haller to be the roots of this plant. See *Helvet. hist. n.* 2194.

If this supposition be true, the roots insinuate themselves between the wood and bark of decay'd trees, frequently to the length and width of two or three feet, and are flat, a quarter of an inch wide, branched in a reticulated fashion, of a woody substance, externally of a dark fuscous, or blackish color, internally white.

The plant to outward view is commonly about one or two inches high, of a tough woody substance, and black color, all but the summits, which are white.

The base of the plant is covered with black woolly down; a little higher it grows dilated, compress'd, bifid, and longitudinally streak'd; and at the top is palmated into flat, acute, white, or ash-color'd horns.

When in fructification, the inferior black part of the plant is covered with hollow spherules, perforated at the summit, and full of a black powder, at the same time that the horns or extreme segments discharge a white powder.

coralloides C. ramis confertis ramosissimis inæqualibus. *Sp.*
 7. *pl.* 1652. *Clus. hist.* p. 274. *gen.* 19. *spec.* 1.
Ger. emac. 1579. *tab. in parte superiore ad dextram.* *Sterb. fung. tab.* 11. *fig.* A. B. C. D.
Tournf. inst. tab. 332. B. *Vaill. Paris. t.* 8. *f.* 4.
Barrelier. ic. 1262 et 1266. *Batarra. tab.* 1.
 A. B.

A. B. Schæffer. tab. 175, 176, 177, 285, 286, 287, 288. opt.)

Coral Clavaria. *Anglis.*

In woods and heaths not uncommon. X. XI.

The height of this is three or four inches. The substance easily broken and friable. The color generally yellow, sometimes white, rarely purple or reddish.

From one common base an inch thick, and often much more, is form'd a close bunch of round or slightly compress'd parallel branches, divided and subdivided, and at last terminating each in two or three short, obtuse, dented segments.—The flesh or internal substance is white. The seeds oval.

It is reputed to be one of the best of the fungous tribe for the table, and is eaten by the *Germans* under the name of *Ziegenbart*.

fastigiata 8. *C. ramis confertis ramosissimis fastigiatis obtusis luteis. Sp. pl. 1652. (Buxbaum. cent. IV. p. 39. t. 66. f. 1. Raii Syn. 3. pag. 479. tab. 24. f. 5. Schæffer. t. 170, 172, 174.)*

Little coral Clavaria. *Anglis.*

In woods and pastures. IX. X.

This is very like the preceding, and perhaps is only a variety.

It is about an inch high, and forms only a small

Y y y 3

cluster.

cluster. The branches few, compress'd, and furrow'd ; a little dilated at the summits, truncated, and either serrated or crenated.

Its color, like the last, is yellow, white, or purple. The seeds oval.

muscoïdes 9. *C. ramis ramosis acuminatis inæqualibus luteis.*

Sp. pl. 1652. (*Raj. Angl.* 3. p. 16. tab. 24. f.

7. *Schæffer. fung. tab.* 173. *opt.*)

Yellow sharp-pointed *Clavaria*. *Anglis.*

In woods and heaths among moss. X.

This has no thick common base, like the two last, but is nearly of the same size throughout, and of a yellow color.

It is divided irregularly into many branches ; the branches unequal in height, their summits acutely forked, and sometimes incurved. The seeds are oval.

OBS. It may not be amiss, in this place, to take notice, that a modern writer has asserted the whole genus of *Clavaria* to belong to the tribe of *Zoophytes* ; that is, to the *animal* and not the *vegetable* kingdom. According to his method, he ranks them among the *Vermes*, under a subdivision which he terms *Fungosa osculis atomiferis*, thereby understanding them to be compound animals, with many orifices on their surface, from which are protruded atoms or animalcules

animalcules, which have a visible spontaneous motion, something similar to what has been observ'd, and is now acknowledg'd to be a fact, with regard to a numerous class of marine bodies commonly term'd *Corallines*. The same author is also inclin'd to suspect the various species of *Helvella* and *Phallus*, which with *Linnaeus* and other writers we have describ'd as vegetables, together with the different kinds of *Sphaeria*, *Trichia*, and *Mucor*, considered as plants by *Haller*, to be of the same nature as the *Clavaria*; though, as yet, he confesses he has not discovered in them any spontaneous motion.—See a book intitled, *Zoologiae Danicae prodromus*. 4to. *Havniae*. 1766. auctore *Müller*.

We dare not assert Mr. *Müller's* opinion to be true or false, as we know little of the powers of nature, and have not yet had sufficient opportunities to examine the subject with that attention it deserves. At present we can only say that we have no reason to induce us to concur with him but his assertion, that we have never yet perceived any such motion as he mentions, in any species of *Clavaria* or other *Fungus*, though possibly such motion may have been seen by more diligent enquirers; that *Schæffer* has figured the seeds of several *Clavariae* as they appeared to him in the microscope;

and that in burnt pieces of the *Clavaria digitata* & *Hypoxylon* we discovered none of that strong hartshorn scent, peculiar to animal substances when put in the fire, but a true vegetable smell.

These observations are not however sufficient to supersede ocular evidence, and therefore we would willingly recommend it to the curious, to search for that animal motion in our *British Clavaria*, which Mr. Müller affirms to have been seen in the *Danish*.

LYCOPERDON. Gen. pl. 1217.

Fungus subrotundus, seminibus farinaceis repletis.

* *Solida subterranea absque radice.*

tuber 1. LYCOPERDON globosum solidum muricatum, radice destitutum. *Sp. pl.* 1653. (*Tournefort t.* 333. *Michel. gen. pag.* 221. *tab.* 102. *opt.*)

Truffles. Subterraneous Puff-balls. *Anglis.*

Found in the woods near *Miggerney* in *Glen-lyon, Perthshire*, by Mr. *Menzies*, in greatest perfection in autumn and winter.

It is a subterraneous Fungus, growing generally in clusters three or four inches under ground, without any visible root. The figure of it is nearly sphaerical, the size that of a potatoe; the exterior coat at first white, afterwards black,

black, and studded with pyramidical or polyhedrous tubercles; the internal substance solid and callous, of a dirty-white or pale-brown color, grain'd like a nutmeg with serpentine lines; in which, according to *Micheli*, are imbedded minute oval capsules, containing each from two to four round warted seeds.

The Truffles of *Great Britain* seldom exceed three or four ounces in weight; but in *Italy*, and some other parts of the continent, they are said to have been found of the enormous size of eight and even fourteen pounds.

They are received at our tables, either fresh and roasted like potatoes, or dry'd and sliced into ragouts.

They have a volatile and somewhat urinous smell, and are reputed to be *aphrodisiacal*.

Dogs are with much pains taught to hunt for them by the scent, and to scratch up the ground under which they lie.

**** *Pulverulenta, radicata, supra terram.***

bovista 2. L. subrotundum, lacerato-dehiscens. *Sp. pl.* 1653.

(*Michel. gen. t.* 97. *fig. omnes. Vaill. paris.*

t. 12. *fig.* 15, 16. *Et tab.* 16. *fig.* 4, 5, 6, 8.

Schæffer. tab. 184—187. *Et* 189—191. *Et* 294,

295. *omnes bonæ cum multis varietatibus.*)

Common Puff-ball. *Anglis.*

In

In meadows and pastures frequent in the autumn, as in the *King's Park*, and at the *Hermitege*, &c.

It varies exceedingly in size, figure, superficies, and color.

In general it consists of a sack or bag, having a root at its base, and the bag compos'd of three membranes, an *epidermis*, a tough white skin, and an interior coat which adheres closely to the central pith.

The pith in the young plants is of a yellowish color, at first firm and solid, but soon changes into a cellular spongy substance, full of a dark dull-green powder, which discharges itself thro' an aperture at the top of the Fungus, which aperture is form'd of lacerated segments, in some varieties reflex'd.

The powder is believ'd to be the seeds, which through a microscope appear of a sphaerical form, and to be annex'd to elastic hairs. See *Haller's Hist. Helvet. n. 2172.*

Among the numerous varieties of this *Fungus*, the following are most remarkable.

glabrum. 1. A smooth sessile kind, of a nearly sphaerical form, pucker'd or contracted at the root.

This sometimes grows to an enormous size. It has been found in *England* as big as a man's head; and at *Carraria*, near *Padua*, in *Italy*, specimens

specimens have been gathered, weighing twenty-five pounds, and measuring two yards in circumference. This was design'd in the following figures. *Sterb. fung. n. 28. e. Schæffer. t. 191. bon. Marsiglii Historia Fungi Carrariensis. Fig. I. II.*

But its more ordinary size is that of a walnut or an apple. See *Schæffer. t. 184. f. 6, 7, 9. & tab. 294. f. 1, 2, 3.*

maculatum. 2. A sessile kind, with a very short neck, and a reticulated or stellated scaly surface. *Schæffer. t. 189, 1, 2, 3. & tab. 190. Vaill. paris. t. 16. f. 4. Michel t. 97. f. 3.*

granulatum. 3. Pear-shap'd, having a thick neck, and a chagrin'd or granulated surface. *Schæffer. t. 185, & 187, Vaill. paris. t. 12. f. 15.*

echinatum. 4. Sessile, and nearly sphaerical; the surface echinated with pyramidal warts, which are either simple, or compounded of four subulated converging points. *Schæffer. t. 186. & tab. 184. Michel. t. 97. f. 5.*

excipuli-forme. 5. With a thick cylindrical neck, the surface echinated with pyramidal warts like the 4th. *Michel. t. 97. f. 1. Vaill. paris. t. 12. f. 16.*

These are the principal varieties, but they have no limits, being frequently found to run into one another; the scaly, warty, and echinated coats turning smooth as the plants grow old, and

and the neck of the Fungus having no determinate length.

The natural color of the *Puff-ball* is either white, grey, or ash-color'd; but is sometimes found yellowish, tawny, and brownish.

The internal spongy part of it, bound on to wounds is esteem'd good to stop bleedings.

Press'd and dry'd in an oven the Puff-ball becomes a kind of tinder, the smoke of which is said to intoxicate bees. See *Gent. Mag. ann.* 1766, July.

The *Italians* fry the first great variety, and indeed any of the others when young, and eat them with salt and oil, according to the relation of *Marfigli*.

Obs. The *LYCOPERDON stellatum*. *Lin. Sp. pl.* 1653, we have not learnt has been yet found in *Scotland*; though it is very probable it may grow there, as it has been discovered in *Sweden*, which is farther to the North.

*** *Parasitica in farinam fatifcentia.*
epidendrum L. cortice farinaque purpurea. *Sp. pl.* 1654.
 3. (*Buxb. cent.* 5. p. 15. t. 29. f. 2. *Schæffer. fung.* t. 193. opt. & fortasse varietas t. 195.)

Little red wood Puff-ball. *Anglis.*

Upon rotten wood, after rains, in autumn, and sometimes in May.

It

It is nearly of a sphaerical form, about the size of a pea, growing sessile, and commonly several together near each other.

When young it is of a red color, soft and succulent, and full of a thick saffron liquor, which in decay turns to a spongy down, either of an orange or a fuscous color, intermix'd with a fine powder.

The coat consists of a thin double membrane, and bursts irregularly.

epiphyllum 4. L. aggregatum parasiticum, ore multifido lacero, pulvere fulvo. *Sp. pl.* 1655. (*Trichia* Haller. *Hist. Helvet. n.* 2168? *Tab.* 48. *f.* 7.

Little yellow parasitic Puff-ball. *Anglis.*

Upon dead leaves, moss, and rotten wood. X.—
IV.

It is about the size of a pin's head, sessile, many together, often touching one another. They are of a yellow color, full of elastic down intermix'd with powder. The coat or rind is very thin, and bursts irregularly. We have observ'd them of various figures, kidney-shap'd, sphaerical, and pear-shap'd. Perhaps they are distinct species.

nigrum 5. L. aggregatum parasiticum sphaericum, ore integro.—*Nova species.* (*Vid. fig. nost.*)

Little

Little black parasitic Puff-ball. *Anglis.*

Upon rotten stumps of trees, in woods and shady places. XI.—V.

These are of the size of small pins heads, perfectly sphaerical and sessile, of a coal-black color, growing in great numbers together, contiguous to and often in layers upon one another.

Each has a coat consisting of two rinds, including in the centre a white pulpy liquor; but this liquor was not discoverable in every individual, for in many that were not open we discern'd neither pulp nor powder, but only a cavity, in which, by the aid of a microscope, we perceived a few hairs crossing one another, so as to form irregular net-work. How or whether the pulp dries away, or into what it is converted, we confess ourselves ignorant.

The orifice of such sphærules as were open was at their top, of a circular figure, the margin intire.

We had strong suspicions that these sphærules might be of animal nature, but from what observations and experiments we have hitherto made, we are induced to think them rather of the vegetable kind.

They are nearly related to the *Sphæria* of Haller. *Hist. Helvet. n. 2180. Michel. gen. tab. 54. ord. 37. fig. 4.*—And also Haller's *Helvet. hist. n. 2181. Michel. tab. 55. Ord. 2. fig. 1.*

MUCOR,

MUCOR. *Gen. pl.* 1218.*Fungus vesiculis stipitatis.** *Perennes.**Sphærocephalus* 1.

MUCOR perennis, stipite filiformi nigro, capitulo globofo cinereo. *Sp. pl.* 1655. (*Haller, Hist. Helvet. tom. III. tab. 48. fig. 2. pag. 116. n. 2160. bon.*)

Grey round-headed Mucor. *Anglis.*

Upon rotten wood, and sometimes upon decay'd plants and mosses. X.—V.

The stalks of these are generally black, about a line in height, bearing each at the top a sphærical ball, of the size of a pin's head; its coat or rind covered with a grey powder, and containing within a black or fuscous spongy down. The coat bursts with a ragged irregular margin.

lichenoides

M. perennis, stipite subulato nigro, capitulo lenticulari cinereo. *Sp. pl.* 1655. (*Dillen. musc. t. 14. f. 3. bon. Haller. hist. Helvet. tom. III. tab. 48. f. 3. a. b. c. d. pag. 116. n. 2161. opt.*)

Little black pin-headed Mucor. *Anglis.*

In the chasms of the bark of old trees, and upon old park pales. X.—V.

These grow in groups many near to each other.

The

The stalks are black, about two lines in height, bearing each a single head, sometimes a double or treble one, of the size of mustard or poppy-seeds, of a roundish figure at first, but, when burst, often flattish or truncated, and of a black color. The internal powdered down is black, with a tinge of green.

** *Fugaces.*

mucedo. 3. *M. stipitatus*, capsula globosa, *Sp. pl.* 1655. (*Michel. tab.* 95. *f.* 1. *Oeder. Dan. t.* 467. *f.* 4. *opt. Malpigh. Vegetat. t.* 25. *f.* 108. *P. Q.*)

Common grey Mould. *Anglis.*

Upon bread, fruits, plants, and other substances in a putrid state. It grows in clusters, the stalks a quarter of an inch high, pellucid, hollow, and cylindrical, supporting each a single globular head, at first transparent, afterwards dark-grey, which bursts with elastic force, and ejects small round seeds discoverable by the microscope.

glaucus 4. *M. stipitatus*, capitulo subrotundo aggregato. *Sp. pl.* 1656. (*Michel. gen.* 212. *t.* 91. *f.* 1. *Malpigh. Vegetat. t.* 25. *f.* 108. *L. M. N.*)

Grey cluster-headed Mould. *Anglis.*

Upon rotten apples, melons, and other fruits,

as also upon decay'd wood, and the stalks of wheat.

These are of a pellucid grey color. The stalks generally single, supporting a sphaerical ball, which, when magnified, appears to be compounded of numerous fine, moniliform, or necklace-like *radii*.

crustaceus 5. *M. stipitatus, spicis digitatis. Sp. pl. 1656. (Michel. gen. 212. t. 91. f. 3.)*

Fingered Mould. *Anglis.*

Upon corrupted food of various kinds, frequent.

This is of a white aqueous color; the stalks single, each supporting at the top four or five necklace-like *radii*, diverging from the same point or centre.

septicus 6. *M. unctuosus flavus. Sp. pl. 1656. (Schæffer. fung. tab. 192. opt.)*

Yellow frothy Mucor. *Anglis.*

Upon the leaves of plants, such as ivy and beech, &c. sometimes upon dry sticks, and frequently upon the tan or bark in hot-houses. VIII.—XI.

It is of no certain size or figure, but of a fine yellow color, and a substance resembling at first cream beat up into a froth.

In the space of twenty-four hours it acquires a

Z z z

thin

thin filmy coat, becomes dry, and full of a footy powder adhering to downy threads.

The feeds under the microscope appear to be globular.

Haller ranks it under a new genus, which he terms *FULIGO*; the characters of which are, that the plants contain'd under it are soft, and like butter at first, but soon change into a black footy powder. See *Haller's bist. Helvet.* n. 2133, & 2134.

APPENDIX.

A P P E N D I X

D I A N D R A

V E N D I T

A P P E N D I X.

O M I T T E D

D I A N D R I A.

arvensis. **V**ERONICA. *Vid. pag. 75.*

Of this there is a singular variety in Dr. *Hope's* collection; the stalk of which is two inches high, erect and hairy, and alternately branched. The leaves are opposite, of an oval heart-shaped figure, smooth and crenated, supported on very short footstalks.

The flowers grow alternate in a spike above an inch in length, their peduncles very short, and arising from the *alæ* of lanceolate *bractææ*, the lowermost of which *bractææ* are larger than the upper, and indented on the edges. Mr. *Yal-*
den.

T R I A N D R I A

M O N O G Y N I A.

pseudacorus.

IRIS. *Vid. pag. 86.*

Segs, i. e. Sedge. *Scotis australibus.*

In *Mull*, and some other parts of the *Highlands*, the root of this plant is used as a cure for the tooth-ach, or any inflammation of the throat. For this purpose, a portion of the root, of the size of a nutmeg, is bruised in a mortar with a handful of daisies, the juice of it strained thro' a linen rag, and a tea-spoonful of it pour'd into each of the patient's nostrils. This strange application is immediately followed by a kind of salivation, or copious defluxion of rheum from the mouth and nostrils, which often effects a cure, but not without great danger of the patient's taking cold during the violence of the operation. *Mr. Stuart.*

pauciflorus. SCIRPUS culmo striato nudo, spica terminali pauciflora valvis calycinis longiore—a *Linnaeo non descriptus.* *Haller. hist. Helvet. n. 1335.* (*Scheuch. Agrost. p. 364. t. 7. f. 19. Oeder Dan. t. 167? sed vix concordat, quoniam foliis radicalibus destituta.*

Little

Little chocolate-headed Club-rush. *Anglis.*

Upon the Highland mountains, as upon *Malgbyrdy* in *Breadalbane*. Mr. *Stuart*. 4. VIII.

It is about three inches high, the stalks destitute of leaves, cylindrical and striated.

The radical leaves resemble the stalks, and often exceed them in height, but are frequently bent downwards in a curve.

Both stalks and leaves are sheathed at their base, the sheaths truncated at top.

The spike is small and oval, of a reddish-brown or chocolate color, terminating the stalk, and composed generally of three or four flowers, supported by a *calyx* consisting of two oval valves which are shorter than the flowers, and have white membranaceous margins.

It differs from the *S. cæspitosus*, in having radical leaves as high as the stalk, truncated *vaginæ* without a *mucro*, and oval valves to the *calyx*, shorter than the flowers, and without an extended rigid point; neither has it the faded oval-acute scales which are found at the base of the stalks in the *S. cæspitosus*.

From the *S. palustris* it manifestly differs, in having a spike compos'd of few flowers, and not digested into an imbricated cone.

cæspitosus. SCIRPUS. *Vid. p. 87.*

Deer's Hair. *Scotis australibus.*

Cip-chaan-du'. *Gaulis.*

This plant is the principal food of the sheep and cattle on all the *Highlands* during the months of *March* and *April*, and till about the middle of *May*.

ERIOPHORUM *polystachion et vaginatum. Vid. pag 89 & 90.*

Moss-crops. *Scotis australibus.*

Cainchean. *Gaulis.*

These spring up in *February*, and in the opinion of the shepherds yield the first nourishment to sheep after the hardships of winter.

The down of the seeds is sometimes gathered by the *Highlanders* to stuff beds with.

D I G Y N I A.

arenarium. PHLEUM spica ovata ciliata, culmo ramoso.

Sp. pl. 88. PHALARIS arenaria. Hudf. Fl.

Ang. p. 21. (Pluk. phyt. t. 33. f. 8.)

Sand Cat's-tail Grass. *Anglis.*

In loose blowing sands near the sea-shores. O.
VII.

Several stalks arise from the same root, from two to six inches high, often single, but more frequently

quently shooting out a single branch from the lowermost joint.

The leaves are plain, smooth, and striated, glaucous when young, but turning yellowish in decay, those on the stalk having inflated *vaginæ*.

Each stalk and branch is terminated with a single closely-imbricated spike, from half an inch to an inch in length, of an oval or short cylindrical form, narrowed at the base.

The *calyx* consists of two equal, compress'd, acuminate valves, their points standing asunder in a forked position, and their *carinæ* or back edges ciliated with white hairs.

These valves are not *truncated* at the top, as in other species of this genus, but regularly *lanceolate*; which seems to be the reason why Mr. Hudson placed this grass under the genus of *Phalaris*. *Linnaeus* however has thought fit to retain it amongst the *Pbleums*, probably on account of its habit and acuminate valves, which stand open at top in a forked position.

Each *calyx* contains a single flower, composed of two downy valves, and followed by a roundish seed.

pumila.

AGROSTIS panicula mutica secunda, culmīs fasciculatis erectis. *Syst. nat. edit. 13. pag. 95.*
Mantiss.

Mantiss. 1ma. pag. 31. (Vid. fig. nost. in fronte tom. 2.)

Dwarf Bent-Grass. *Anglis.*

Frequent in barren soils, as on the *Pentland* hills, mix'd with other grasses. We have also observ'd it often in sterile grounds both in *England* and *Wales.* 4. VII.

The stalks are smooth, about two or three inches high, and grow several in a cluster from the same root, each of them furnished with three or four leaves, similar to those which proceed from the root, having striated sheaths, and margins a little inflected.

The panicle is branched, the branches standing open, nearly at right angles with the stalk, and inclining generally to one side.

The flowers are numerous, without beards, of a dull-grey purple color, turning whitish in decay.

The seeds are oval and tumid.

It differs from the *A. stolonifera*, in not being half so large, and in stalks growing more in clusters, without shoots or runners.

caespitosa. AIRA. *Vid. pag. 94.*

A variety of this frequently occurs upon the *Highland* mountains, about the month of *October*, with a *viviparous* panicle, similar to what
is

is often observ'd to happen to the *POA alpina* and *FESTUCA ovina*.

Upon *Maol-gblas* and *Benteskerny* in *Breadalbane*.
Mr. *Stuart*.

aquatica. *POA* panicula diffusa, spiculis sexfloris linearibus.
Sp. pl. 98. (*Scheuchz. agrost. p.* 191. *t.* 4. *f.* 1. *Moris. hist. Ox. III. p.* 201. *sect.* 8. *tab.* 6. *fig.* 25. *bon.*)

Great Water Poa, or Water Reed-grass. *Anglis.*
On the sides of rivers, ponds, and ditches, but not common. In the ditches at the foot of *Edinburgh* castle rock. Mr. *Yalden.* 4. VII. and VIII.

It is five or six feet high, the largest of the *British* grasses. The leaves are smooth, half an inch wide or more. The panicle is eight or ten inches long, greatly branch'd, and deck'd with numerous *spiculæ*.

The *spiculæ* are of a reddish-brown color, intermix'd with green, of a compress'd lanceolate form, imbricated with about six flowers for the most part, but varying from five to ten. The peduncles are smooth.

Cattle are very fond of this grass, and in deep muddy places will sometimes run the risk of suffocation to get at it.

rigida. POA panicula lanceolata subramosa secunda, ramulis alternis secundis. *Syst. nat. edit. 13. p. 98. Sp. pl. 101. (Barrel. ic. 49. Vaill. Paris. t. 18. f. 4. bona. Moris. hist. Ox. III. p. 182. sect. 8. t. 2. f. 9.*

Hard Poa Grass. *Anglis.*

On walls, rocks, and dry barren soils. On *Salisbury Craig*, and plentifully on all the rocks in the king's park, &c. ☉. VII.

Several stalks arise from the same root, each about a finger high, erect, firm, and stiff, branched at the top into a narrow lanceolate panicle, the branches all disposed on one side of the stalk.

The leaves are very narrow and flat, their edges often inflected,

The *spiculæ* are of a compress'd linear-lanceolate form, either of a dull reddish purple or a green color, imbricated generally with about eight flowers, but varying from five to ten. The peduncles are rigid, and shorter than the *spiculæ*.

media. BRIZA. *Pag. 99.*

A double or monstrous variety of this was shewn me in the collection of Dr. *Hope*, accidentally found wild in *Scotland*.

The *spiculæ* were of a lanceolate figure, the valves of the *calyx* greatly multiplied or increas'd

creased in number, but destitute of *corolla* and *stamina*, and consequently quite barren.

The *spiculæ* were elegantly imbricated, and strongly mimick'd those of the *BRIZA eragrostis*. *Lin.*

glabra. FESTUCA panicula ramosa erecta coarctata, spiculis subulatis trifloris aristatis glabris.—
Nova species. (Fig. nulla.)

Smooth Fescue-grass. *Anglis.*

Found at *Ardbigland* in *Galloway*. 24. VII.

This stalk reclines a little at the base, but afterwards grows erect, a foot high, and is quite smooth.

The leaves are narrow, linear, compress'd, and smooth in every part; the *radical* ones from six to ten in number, some few of them reaching to the base of the panicle, the stalk ones but two, the uppermost a little higher than the panicle, and both surrounding the stalk with long smooth *vaginæ*.

The panicle is about three inches long, erect, branched, and contracted. The branches are alternate and slender, (the lower ones bifid or once divided) bearing each about five *spiculæ*.

The *spiculæ* are of a narrow subulate form, quite smooth, and contain each three flowers, the upper ones often two only.

The

The *calyx* consists of two smooth, lanceolate, sharp valves, the lower one the shortest.

The *corolla* is also compos'd of two lanceolate acute valves, about a third part longer than the *calyx*, folded together in the form of a smooth, narrow, subulate cone, tinged a little with a reddish purple color. The exterior valve is terminated with a beard, about a quarter part of its own length; the interior valve is shorter than the other, and only acuminate.

secalinus. BROMUS panicula patente, spiculis ovatis, aristis rectis feminibus distinctis. *Syst. nat. edit.* 13. p. 102. *Sp. pl.* 112. (*Scheuch. agrostog.* 250. t. 5. fig. 9. *spicula.* *Moris. hist. Ox. sect.* 8. t. 7. f. 16. *bon.*)

Corn Brome-grass. *Anglis.*

It grows in corn-fields amongst the grain, but not common, as in the fields behind the botanic garden near *Edinburgh.* Mr. *Talden.* ☉. VI. VII.

The stalks are near a yard high, several from the same root.

The radical leaves fade when the stalks are form'd; the cauline ones are six or eight inches long, and a quarter of an inch wide, striated and covered with downy hairs, especially on the upper side, the edges rough.

The

The panicle is six inches long, branched, and open.

The *spiculæ* are above half an inch long, large, oval, and distichous, erect at first, but nodding when big with seeds, compounded each of eight, ten, or twelve flowers, of a green color, covered with short downy hairs which wear off by age.

The valves of the *calyx* are unequal, one being oval and pointed, the other narrower and lanceolate.

The exterior valve of the *corolla* is convex, obtuse, and tumid, furnish'd on the back with a straight beard, arising a little below the apex, and about two thirds of the valve in length.

If the seeds of this grass be mix'd with the corn in any great quantity, they will render the bread disagreeably bitter.

The common people in *Sweden* entertain an absurd notion, that rye is often converted into this grass.

ramosus. BROMUS panicula nutante scabra, spiculis villosis aristatis, foliis scabris. *Syst. nat. edit.* 13. pag. 102. *Huds. Ang. p.* 40. (*Moris. hist. Ox. sect.* 8. t. 7. f. 27.)

Great branched Brome-grass. *Anglis.*

In woods and hedges but rare in *Scotland*. We found

found it not ourselves, but have received information from Dr. *Burges*, that he had discovered it in a deep *Cleugh* call'd *Auchenbraith Linn*, on the north side of the water of *Ea*, about two miles above the church of *Kirkmichael*. ☉. VIII.

The stalk is five or six feet high, often much more.

The leaves are a foot long, rough, and hairy, their *vaginæ* striated and very hairy.

The panicle is a foot long or more, greatly branched, and nodding in a curve.

The *spiculæ* are linear and subulate, more than an inch long, composed of about ten bearded flowers, rough to the touch, and generally tinged with a dark reddish color, especially in decay.

The valves are carinated, the beards rigid and straight, and about half the length of the valves.

The *B. giganteus* differs from this, in having stalks not above half so high, *spiculæ* not above a third so long, of an oval form, a green color, containing only about four or five flowers, the beards longer than the valves, white, pliant, and full of flexures, and the whole plant much weaker and smoother.

TETRAN-

T E T R A N D R I A

M O N O G Y N I A.

verum.

GALIUM. p. 115.

I have asserted that the *Highlanders* use the roots of this plant to dye a red color.

Their manner of doing it is this: they first strip the bark off the roots, in which bark the virtue principally lies. They then boil the roots thus stripped in water, to extract what little virtue remains in them; and after taking them out, they last of all put the bark into the liquor, and boil that and the yarn they intend to dye together, adding allum to fix the color.

In making the *runnet* already mentioned with the decoction of this herb, the *Highlanders* commonly add the leaves of the *Urtica dioica*, or *Stinging Nettle*, with a little salt.

lanceolata. PLANTAGO. p. 118.

Slan-lus. *Gaulis.* i. e. The healing Plant.

The *Highlanders* ascribe great virtues to this plant in healing fresh wounds. Sometimes the fresh leaves are apply'd alone, sometimes an ointment made of it.

D I G Y N I A

CUSCUTA. *Gen. pl.* 170.*Cal.* 4-fidus. *Cor.* 1-petala. *Caps.* 2-locularis.*europæa.*CUSCUTA floribus sessilibus. *Sp. pl.* 180. (*Ger. emac. p.* 577. *Oeder. Dan. t.* 199. *opt.*)Dodder. *Anglis.*

It grows upon furze, heath, nettles, flax, thyme, and other plants. Upon furze bushes near *Mollance* in *Galloway*. *Dr. Burgefs. O. VII. VIII.*

It is a parasitical plant of a very singular nature, destitute of leaves and roots.

It consists only of red, succulent, thread-like stalks, twisting about the plant on which it grows in a spiral direction, contrary to the sun's motion, and drawing its nourishment from it by small sucking *papillæ*, fix'd into the pores of the bark or rind, thereby exhausting the foster-plant of its juices, imbibing its virtues, and often destroying it.

The flowers grow in thick sessile clusters on the sides of the stalks, and at the angles of the branches, of a whitish or pale-red color; the *calyx* and *corolla* of each divided generally into four, but sometimes five segments.

The seed has no *cotyledons* or seminal lobes, but shoots out a spiral thread without roots.

Instead

Instead of leaves, the plant is furnished only with a few very minute membranaceous scales, adhering closely to the stalk just under the branches.

T E T R A G Y N I A.

lucens.

POTAMOGETON. *p.* 122.

A variety of this with long, lanceolate, dock-shap'd leaves, has been found in the river *Clyde*; the same kind mentioned by *Ray*, in his *Synops. III. p.* 184. *n.* 2.

maritima.

RUPPIA. *p.* 124.

A singular variety of this was shewn me in Dr. *Hope's* collection, with a peduncle coiled in a spiral form, and which when extended measured nine inches.

If I remember right, he said it was gathered on the coast of *Orkney*.

P E N T A N D R I A

M O N O G Y N I A.

tuberosum.

SYMPHYTUM foliis semidecurrentibus, summis oppositis. *Syst. nat. edit.* 13. *p.* 158. (*Clus.*

4 A 2

hist.

hist. pag. 166. Ger. emac. p. 806. f. 3. Jacquin. obs. 3. p. 12. t. 63.)

Tuberous-rooted Comfrey. *Anglis.*

It has been observed in several places in *Scotland*.

Mr. *Yalden* found it growing sparingly opposite the new well at the water of *Leith*, but more plentifully in Dr. *Robertson's* walks at *North Marchiston*, where it seems to be a native. 4.

VII.

It is very nearly related to the *S. officinale*, and by some is thought to be only a variety of it.

It differs however in having a tuberous-headed root, white on the outside; whereas the roots of the *S. officinale* are externally black.

The leaves also of that we are describing are narrower, the upper ones more oval than the other, and in general less decurrent, or not running so low down the stalk.

The flowers are pale-yellow, or straw-color'd. The subulated rays in the front of the flower are finely dented throughout, whereas those of the other are without dents at the base.

RHAMNUS. *Gen. pl. 265.*

Cal. tubulosus, squamis stamina munientibus.

Cor. nulla. Bacca.

catharticus. **RHAMNUS** spinis terminalibus, floribus quadridis dioicis, foliis ovatis, caule erecto. *Sp. pl.*

279. *Syst. nat. edit. 13. p. 194. (Ger. emac. 1337. fig. 1. Blackwell. t. 135.)*

Buckthorn, or purging Thorn. *Anglis.*

I am assured by Mr. *Xalden*, that this has been found growing wild near *Dumfries*. H. V.

This is a dioecious shrub, the old branches of which are terminated with thorns.

The leaves are oval-lanceolate, finely serrated on the edges, their nerves converging together.

The flowers grow in clusters, one on each foot-stalk, white, and in this species divided into four segments, containing four *stamina* and one *style*. The fruit is a round black berry, containing four seeds.

The juice of the berries, in the quantity of five or six drachms, is a strong purge; but it is generally made into a syrup for this purpose, two ounces of which is a dose. The bark is emetic.

The juice of the unripe berries with allum, dyes a yellow color; of the ripe ones, a green color.

The bark also dyes yellow.

trifoliata. MENYANTHES. p. 137.

The *Highlanders* esteem an infusion or tea of the leaves, as good to strengthen a weak stomach.

Mr. *Stuart*.

belix.

HEDERA. p. 146.

An ointment made of the leaves is much valued by the *Highlanders* as a ready cure for burns.
Mr. Stuart.

D I G Y N I A.

campestris. ULMUS. p. 151.

The variety most common in *Scotland* is the *Broad-leav'd Wyck-elm*, which is certainly a native.

It grows to a large size, and is widely branched, not tapering, like the common *English Elm*.

The bark of the young branches is smooth, and very tough, but that of the old trees is rough, and full of chafms. The leaves are rough, about three inches long, and two broad, doubly ferrated on the margin, their base unequal.

A decoction of the inner bark of this tree, is reputed to be an excellent antiscorbutic. The *Highlanders* make good ropes of the same.

Cattle, swine, and variety of insects are fond of the leaves.

The timber is hard and tough, and is used to make axles, screws for presses, nave-stocks for wheels, and boards for numberless uses.

DAUCUS.

carota. DAUCUS. p. 156.

Curan. *Gaulis.*

The *Highlanders* frequently eat the roots of the wild Carrot, and esteem them wholesome and nutritive. Mr. Stuart.

meum. ATHAMANTA. p. 157.

The *Highlanders* are fond of chewing the root of this plant. It has a warm aromatic taste, and is esteem'd a good carminative.

latifolium. SIUM foliis pinnatis, umbellis terminalibus. *Sp. pl.* 361. (*Ger. emac.* 256. f. 1. *Rivin. t.* 77. *Moris. hist. Ox. sect.* 9. *tab.* 5. *fig.* 1. *ordinis medii.* *Oeder Dan. t.* 246. *Jacquin. Fl. Aust. tab.* 66. *opt.*)

Great Water Parsnep. *Anglis.*

On the sides of lakes, ponds, and rivulets, but rare. In the loch at the corner of the king's park. Mr. Yalden, 4. VII. VIII.

The stalk is erect and furrowed, a yard high or more. The leaves are pinnated with three or four pair of large elliptic *pinnae*, with an odd one at the end, all serrated on the edges.

The stalk and branches are terminated with erect umbels, which is the chief character of this species.

The universal *involucrum* in this species is wanting. The partial ones consist of many *foliola*, often dented on the margins. The petals are white.

Cattle feeding upon this plant are reported to have run mad.

verticillatum 2.

SISON foliolis verticillatis capillaribus. *Sp. pl.* 363. *Moris. hist. sect. 9. t. 7. f. 10. Moris. Umbell. ic. Oenanthe Millefolii palustris folio. tab. 6. melior. & fig. nost.*

Verticillate Sison. *Anglis.*

In moist meadows about *Greenock* plentifully, first observ'd by Mr. *Houstoun*.

In many like places in *Nithsdale* and *Galloway*; and also in *Annandale*, particularly in the meadow between the farm-house of *Stank* in *Ruthwell*, and the bathing-place on the shore. Dr. *Burgefs*.

It has of late also been discovered in South Britain, as in the Isle of *Man*, by the Rev. Mr. *Davies*, of *Beaumaris* in *Anglesey*. In *Pembrokeshire* by the Rev. Mr. *Holcombe* of *Pembroke*; in *Glamorganshire* by the Rev. Sir *John Cullum*, Bart. and by ourselves in almost every moist meadow in *Caermarthenshire* and *Pembrokeshire* abundantly. From hence it appears

Sison verticillatum.

Appendix.

P. 1096.



Partial Involuc.



Wm. Griffiths del.

P. Marshall

pears to affect the western side of the kingdom.

PLATE VIII.

The root consists of long round fibres, crown'd
at the top with the dry scaly remains of the

The bark is about a line thick, of the size of a
fine thread, and is covered with a thin, shining
glaze, which is broken by small, dark, punctures.

The internal texture is soft, and is covered
with a thin, shining, white, powdery substance,
which is broken by small, dark, punctures.
The wood is white, and is covered with a
thin, shining, white, powdery substance,
which is broken by small, dark, punctures.

The leaves are small, and are covered
with a thin, shining, white, powdery substance,
which is broken by small, dark, punctures.

The flowers are small, and are covered
with a thin, shining, white, powdery substance,
which is broken by small, dark, punctures.

The fruit is small, and is covered
with a thin, shining, white, powdery substance,
which is broken by small, dark, punctures.

pears to affect the western side of the kingdom.

4. VII. VIII.

The root consists of long tumid fibres, crown'd at the top with the dry bristly remains of decay'd leaves.

The stalk is about a cubit high, of the size of a crow-quill, erect, and towards the top sparingly branch'd, furnish'd with only two or three distant leaves.

The radical leaves are six inches long, linear, and undivided, apparently furrounded with numerous whirls of capillary *foliola*, about a quarter of an inch in length. Strictly speaking however, these whirls are compos'd only of opposite and sessile pinnules, embracing a common rib at their base, and divided deeply into acute capillary segments.

The *common* umbel consists of eight or ten rays, the partial ones of about double that number, their disc nearly plane.

The common and partial *involucra* are composed each of five or six oval acute *foliola*.

The flowers are all hermaphrodite, the petals white, the seeds oval and longitudinally furrowed.

TRIGYNIA.

T R I G Y N I A.

nigra.

SAMBUCUS. p. 171.

Druman, Droman. *Gaulis.*

The bark of this with copperas is used by the
Highlanders to dye a black color.

P E N T A G Y N I A.

armeria.

STATICE, p. 173.

Tònag-a-chladaich. Bàr-dearg. *Gaulis.*

This is esteem'd by the *Highlanders*, particularly
 about the mountains of *Glenco*, where it
 abounds, to be one of the richest and best kinds
 of herbage for their black cattle. Mr. *Stuart*.

DROSER *rotundifolia* & *longifolia*, p. 175.

The spike of flowers before the time of blossom
 is coiled up in a spiral, but in the month of
July, the time of florescence, it unfolds; at
 which season, according to *Linnaeus*, the flowers
 open at nine o'clock in the morning, and shut
 up at noon.

The liquor which exsudes from the hairs of the
 plant, is said to take away warts and corns.

The *Highlanders* believe that the rot in sheep
 is

is often occasioned by their feeding on this herb, which opinion is very ancient.

H E X A N D R I A.

*non scrip-
tus.*

HYACINTHUS. p. 182.

The *Highlanders* call this plant in their language Fuath-muc, i. e. *The Aversion of Swine*, and say that swine have a particular dislike to the roots.

trifidus.

JUNCUS, p. 184.

See a good figure of the variety of this with a single flower, in *Jacquin's Enumeratio stirpium Vindobonens.* tab. 9.

bufonius.

JUNCUS, p. 185.

The young seedlings of this rush grow in tufts, and resemble in that state a moss of the *Bryum* kind. The leaves are narrow and subulate, scarcely a quarter of an inch high, many of them bearing the yellow coat of the seed on their summits, which at first view appears like the *anthera* of a *Bryum*.

Petiver calls these diminutive seedlings by the name of *Pin-beaded Cobweb Mushrooms*. See his figure of them, *Petiv. Gazoph. tab. 51. f. 7.* and a much better in *Rose's Elements of Botany.*

tany, lately published. *Appendix, tab. 2. f. 5.*
A. B.

Dr. *Burges* observ'd these seedlings in a wet sandy
foil, on the bank of a rivulet call'd *Glenkill-*
burn, near *Kirkmichael* in *Dumfriesshire*.

biglumis. JUNCUS folio subulato, gluma biflora termina-
li. *Sp. pl.* 467. *Amœnitat. academ.* 2. p. 260.
t. 3. f. 3. *Oeder. Dan. tab.* 120. *bona.*)

Two-flower'd Rush. *Anglis.*

Upon the top of *Mal-gbyrdy*, a mountain lying
betwixt *Glenlocky* and *Glenlyon*, and upon *Ben-*
Teskerny, both in *Breadalbane*. Mr. *Stuart*.
4. VIII.

The stalk is a finger high, naked, and terminated
with two sessile flowers, embosom'd in a com-
mon *involucrum*, consisting of two valves, the
exterior of which is subulate, and longer than
the flowers, the interior oval and shorter.

The leaves are but few in number, hardly half the
length of the stalk, plane, and grass-like.

It is very nearly related to the JUNCUS *triglumis*,
and perhaps only a variety of it.

O C T A N D R I A.

myrtillus. VACCINIUM, p. 200.

The Ptarmigan, Black Cock, and Ring-ouzel
feed voraciously on the berries of this plant.

VACCINIUM.

vitis idæa. VACCINIUM. p. 102.

The berries are eaten by the *Highlanders*, and reckoned wholesome and cooling. Mr. *Stuart*.

DECANDRIA TRIGYNIA.

noctiflora. SILENE calycibus decemangularibus, dentibus tubum æquantibus, caule dichotomo, petalis bifidis. *Syst. nat. edit.* 13. pag. 351. *Sp. pl.* 599. (*Parkins.* 632. *Camerar. hort.* 109. t. 34. *Moris. hist. Ox. sect.* 5. tab. 20. fig. 2. ordinis medii.

Night-flowering Catchfly. *Anglis.*

In the fields behind the physic-garden near *Edinburgh*. Perhaps escaped out of the garden, as this is the only place in which it has yet been observ'd. Mr. *Yalden*. ☉. VII. and VIII.

The stalk is rough, about a foot high, erect, and slightly dichotomous at the top.

The leaves are oval-lanceolate, narrowest at the base, sessile, and hairy.

The flowers grow at the summits of the branches, and out of the *alæ* of the upper leaves, supported on footstalks.

The *calyx* is tumid at the base, narrowed towards the top, and streak'd externally with ten green lines.

The petals are heart-shaped, of a very pale red
on

on the upper side, and cream-color'd underneath, furnish'd each at the base of the limb with two serrated auricular appendages. The *stamina* are ten, the *pistils* three. The fruit an oval capsule with five valves, and three cells, containing numerous seeds.

In hot weather the plant is viscid to the touch, and the petals are closed till the evening.

Pheasants, I am inform'd, are very fond of the seeds.

tenuifolia. ARENARIA foliis subulatis, caule paniculato, capsulis erectis, petalis calyce brevioribus lanceolatis. *Syst. nat. edit.* 13. p. 354. *Sp. pl.* 607. (*Vaill. paris.* 7. t. 3. f. 1. bon. *Oeder. Dan.* t. 389 ?)

Fine-leav'd Chickweed. *Anglis.*

Upon walls, rocks, and stoney barren soils, but rare. Upon *Cramond* island in the *Forth*. Mr. *Yalden.* 4. VI. VII.

The stalks are three or four inches high, erect, smooth, and branched towards the top into a kind of panicle, composed of several flowers, supported on very slender peduncles.

The leaves are smooth, subulate, furrow'd, broad at the base, and coalescent, rendering the stalk knotty at their union.

The leaves of the *calyx* are generally smooth, oft-times

times a little hairy, lanceolate, and acutely bearded; the edges white, the back mark'd with two green streaks or elevated lines.

The petals are white, oval, and about half the length of the *calyx*.

It has ten *stamina* and three styles.

The capsule is of an oval conical form, empty at the top.

PENTAGYNIA.

dioica. LYCHNIS. p. 241.

I am assured by my ingenious friend Dr. *Burges*s, that he has frequently observ'd male and female flowers, both of a red and a white color; so as to induce him to think, that the red and the white kinds are two distinct species, each of them dioecious. This observation merits a further examination; for we are inclin'd to believe, that plants do not always confine themselves to human systems, but what observations are true of them in one country, may not always hold good in another.

ICOSANDRIA.

spinossissima. ROSA. p. 260.

This has commonly a white or cream-color'd flower,

flower, but sometimes a small red flower ; and rarely a red flower striped or variegated with white, which last is the *Cipkian Rose* of *Sibbald*.

DIDYNAMIA GYMNOSPERMIA.

birsuta. MENTHA floribus capitatis, foliis ovatis serratis subsessilibus pubescentibus staminibus corolla longioribus. *Syst. nat. edit.* 13. p. 444. *Mantiss. prima.* p. 81. (*Moris. hist. f.* 11. t. 7. f. 6. & *Raii Syn.* p. 231. tab. 10. f. 1. sunt valdè similes huic speciei.)

Hairy Mint. *Anglis.*

Observ'd by Mr. *Stuart* in a rivulet at *Killin*, near the head of *Loch-Tay*. 4. VIII.

This was inserted in the body of this work, as a variety of the *M. aquatica* ; but *Linnaeus*, on the authority of Mr. *Hudson*, has lately thought fit to consider it as a distinct species.

The leaves are more hairy and sessile than those of the *M. aquatica* ; in other respects it is extremely like it.

TETRADYNAMIA SILIQUOSA.

parviflora. CARDAMINE foliis pinnatis exstipulatis, foliolis lanceolatis obtusis, floribus corollatis. *Syst. nat.*

nat. edit. 13. p. 497. *Sp. pl.* 914. (*Fig. nulla fidenda.*)

Small flower'd Ladies-Smock. *Anglis.*

In shady, wet, and boggy places, frequent. ☉.
V—VII.

The stalks are six or eight inches high, angular, branched, form'd into zig-zag flexures at the origin of the branches, and covered with downy, white, horizontal hairs.

The leaves are pinnated with three or four pair of lobes, and an odd one at the end.

The lobes of the *radical* leaves are nearly heart-shap'd, and a little sinuated on the edges; those of the *stalk-leaves*, especially the uppermost, are elliptical, with two or three distant teeth, or dents on each side of the margins. They are also sprinkled with hairs on the upper surface, but not so numerous as on the stalk.

The flowers are small and white, and furnished with six *stamina*.

The *C. hirsuta* differs from this in the following respects. The stalks are generally about three or four inches high, seldom six, straighter and less hairy than the foregoing.

The lobes of the upper stalk-leaves are narrow, almost linear and entire.

The flowers have only four *stamina*, two being abortive.

It flowers in *March*, seeds in the beginning of *May*, and grows in garden-walks, dry banks, and on the brinks of springs and rivulets.

OBS. From hence it is manifest, that much confusion would be avoided, if the trivial names of these two plants were changed; for the *C. hirsuta* is a plant the least hairy of the two, and its flowers certainly as small as those of the *C. parviflora*.

MONODELPHIA DECANDRIA.

sylvaticum. GERANIUM. p. 367.

In Dr. *Hope's* curious collection, is a dwarf variety of this plant, with a very large flower, found in *Scotland*.

It is worth remarking also, that the petals in this plant are sometimes found obtuse and intire at the summits, and not at all emarginated. In this state it is figured by Mr. *Rose*, in his *Elements of Botany*. Appendix. tab. 1.

rotundifolium.

GERANIUM pedunculis bifloris, petalis subintegris longitudine calycis, caule prostrato foliis reniformibus incis. *Syst. nat. edit. 13. p. 515. Sp. pl. 957.* (*Fig. nulla fidenda' quippe figura Vaillantii, a Linnæo citata, exhibet petala bifida.*)

Round-leav'd Cranesbill, with intire petals. *Anglis.*

On the east side of *Mason's* garden, near *North-Marchiston*. *Dr. Hope.* ☉. VII.

The stalk is a foot high, viscid, and downy, widely divaricated, the branches prostrate.

The leaves are kidney-shaped, their outline circular, soft, and downy, a little viscous underneath, divided into five indented lobes, the margins and angles of the lobes commonly red. The *stipulæ* are lanceolate and red.

The leaves of the *calyx* are downy, longitudinally streak'd with three lines, and bearded at top; the beards obtuse, and terminated with two or three downy hairs longer than the rest.

The petals are of a pale bluish-red color, a little longer than the *calyx*, broadest at the top, obtuse, and intire, their *ungues* or bases yellowish.

It has ten *stamina*; the *antheræ* yellow, the coats of the seeds downy.

SYNGENESIA *Polygamia superflua.*

crithmifo- INULA foliis linearibus carnosiss tricuspидatis.

lia. *Syst. nat. edit.* 13. p. 638. INULA *crithmoides.*

Sp. pl. 1240. (*Ger. emac.* 533. fig. 3. *Morif. hist. hist. Ox. f.* 7. t. 21. f. 16.)

Golden Sampire. *Anglis.*

Upon high rocks by the sea-side, and sometimes

in sea-marshes, that are form'd upon a stony or gravelly bottom.

We are assured by Dr. *Burgess*, that it has been gathered upon the shore not far from the port of *Ardbigland*, in the county of *Galloway*. 24.

VIII. IX.

Many stalks arise from the same root, a foot high, woody at the base, slightly branched at the top.

The leaves are numerous, and grow all round the stalk without order.

They are smooth and succulent, of a narrow linear shape, many of them widest at the end, and terminated with three short dents.

The flowers grow erect at the summits of the branches, from one to three or four in number.

The *calyx* is imbricated with many loose, narrow, green leaves. The flowers are yellow, and radiated with numerous, linear, female florets, intire at the summits. The hermaphrodite ones in the disc are tubular, and quinquefid at the rim.

The receptacle is plane and naked, the seeds crown'd with a short simple down.

GNAPHA-

dioicum. GNAPHALIUM, p. 470.

A variety of this a foot high, was found near *New Possö*. Mr. *Xalden*.

SYNGENESIA MONOGAMIA.

hirta. VIOLA acaulis, foliis cordatis piloso-hispidis.

Sp. pl. 1324. (*Moris. hist. Ox.* 2. p. 475.

sect. 5. *tab.* 35. *f.* 4. *Brunsfels. herb.* 1. p.

137. *f.* 3. *Oeder. Dan. t.* 618.

Hairy Violet. *Anglis.*

In the county of *Dumfries* very frequent, but rare in the *Lothians*, and the eastern side of *Scotland*.

4. IV. V.

The root is thick, upright, and destitute of creeping runners. The leaves are of a long heart-shaped figure, hairy underneath, their footstalks also hairy.

The peduncles arise immediately from the root, and have two lanceolate *bractææ*, situate below their middle part.

The flowers are pale-blue, without fragrance; those which are last produced destitute of petals, but all fertile, as hath been justly observ'd by Mr. *Curtis*, the ingenious author of the *Flora Londinensis*.

CRYPTOGAMIA MUSCI.

apocarpum. BRYUM. *var. β*. *Sp. pl.* 1579. (*Vaill. paris. t.* 27. *f.* 18. *Dillen. musc. t.* 32. *f.* 5.)

Hoary red-headed Bryum. *Anglis.*

Upon the rocks on the *Highland* mountains frequent. XI.—III.

This seems to be more than a variety. It is probably a distinct species from that we have described.

The stalks are longer, being about two inches high, and more branched; the summits of the branches frequently a little curved or hooked.

The leaves are more numerous, a little broader, convexo-concave, and terminated with a much longer hoary hair. In the winter they are of a pale-green, but in the spring and summer of a grey hoary color, patent when moist, but press'd close to the stalk when dry; appearing in this last instance (except in the hairiness) like a sprig of Cypress.

The capsules are a little larger than those of the other sort, and like them grow sessile on the summits of the branches, buried amongst the leaves. They are green at first, but reddish when ripe. The *operculum* is of a bright-red color,

color, but the rim of the capsule is naked, and not ciliated like the other.

loreum.

HYPNUM furculis reptantibus, ramis vagis erectis, foliis secundis, antheris subrotundis.

Sp. pl. 1593. (*Vaill. paris.* 138. t. 25. f. 2.

Dillen. musc. t. 39. f. 40. opt.)

Round-headed rambling Hypnum. *Anglis.*

In the mountainous woods of *Breadalbane.* Mr. Stuart.

This bears a great resemblance to the *H. squarrosus*, but differs from it in the following respects.—The stalks and branches are much longer, trailing often to the length of eight or nine inches, their extremities a little hooked or recurved. The leaves are not reflected every way all around the central rib, as in the *H. squarrosus*, but are curved generally to one side only, and that principally towards the summits of the branches. The peduncles are also somewhat shorter, and the capsules rounder.

CRYPTOGAMIA ALGÆ.

BLASIA. *Gen. pl.* 1199.

MASC? *Cal.* cylindricus granis repletus.

FEM? *Cal.* nudus. *Fruetu* subrotundo foliis immerso, polyspermo.

pufilla.

BLASIA. *Sp. pl.* 1605. (*Michel. gen. pag.* 14. *t.* 7. *Dillen. musc. t.* 31. *f.* 7. *bon.* *Oeder. Dan. t.* 45. *opt.*)

Dwarf Blasia. *Anglis.*

On the perpendicular banks of ditches and rivulets in a sandy or gravelly soil, near the surface of the water, in damp or shady places, but rare. *Mr. Yalden.* X.

It grows flat upon the ground, in a circle or patch, composed of numerous thin, green, pellucid leaves, mark'd with a few whitish veins near the base, divided and subdivided into obtuse segments, obscurely crenated on the edges. The margins of the leaves are a little elevated, but the interior parts adhere close to the ground, by a fine down, which serves the purpose of roots.

Its habit resembles some kinds of *Lichen* or *Jungermannia*, but its fructifications are more like those of the *Mnium*.

The supposed male fructifications, when magnified, resemble a *Florence* flask; or, to the naked eye, a small green bulb, having a hollow cylindrical neck, of the size of a hog's bristle, about one-eighth of an inch long, terminated with a little granulated head, which soon falls off, and leaves the neck with an open mouth, like a bottle without a cork. Several
of

of these bulbs, with their necks and heads, arise out of the surface of the leaves near the extremities of the segments.

Besides these, there are other fructifications, supposed by *Dillenius* to be *female*, which resemble green shining grains or globules, scattered without order upon the surface and edges of the leaves, and which he imagines to be the rudiments of young plants.

There are also further to be seen dark-green or black specks, immers'd in the substance of the leaves, and disposed three or four in a row near their margins. These seem to be what *Linnaeus* supposes the female fructifications.

The first-mentioned bulbs, with their necks and granulated heads, are very quick in their rise and decay, but a continued succession of them is visible from *October* till *Christmas*, about which time the plant dies away, and appears not again till *July* or *August* following.

CRYPTOGAMIA FUNGI.

SPHÆRIA *Haller. hist. III. p. 120.*

Fructus sphaerici, pulvere carbonario pleni, prae-
rumque sub cortice latentes.

tuberculosa. SPHÆRIA atra convexa, carne nigra. *Haller.*

hist. III. p. 121. n. 2187. an LYCOPERDON

variolosum?

variolosum? Lin. *syst. nat. edit.* 13. *pl.* 824.

(*Mich. gen.* p. 105. n. 8. t. 54. ord. 2. f. 2.

Dillen. musc. t. 18. f. 7.)

Knobbed Sphæria. *Anglis.*

Upon dry'd sticks, and the decay'd bark of trees.

XI.—III.

These are hard convex tubercles, with an uneven surface, of the size of warts, and of a black fuscous color. When cut transversely, their internal part appears to be full of minute hollow sphaerules, imbedded in a dark fuscous substance, and replete with a black powder.

The tubercles are commonly distinct, but are sometimes confluent.

It has very little affinity with the *Lycoperdons*.

We agree with *Haller*, that it ought to be ranked under a new *genus*.

The tubercles are sometimes found externally of a ferrugineous color.

Additional PLACES of GROWTH to
some of the rarer PLANTS.

DIANDRIA.

Utricularia minor. In several peat-pits in the
moss, on the east side of the black loch, about
a mile S. W. from *Kirkmichael* in *Dumfriesshire*.
Dr. *Burgess*.

Circæa alpina. Under the rocks on the east side
of *St. Mary's Loch*, at the head of *Yarrow-*
water, in the county of *Peebles*. Dr. *Burgess*.

TRIANDRIA.

Sclœnus compressus. At *Dumbarton* castle near
the river side. Mr. *Yalden*.

Scirpus sylvaticus. On the edge of the *Cum-Burn*,
opposite to *Lochrighead*, in the parish of *Kirk-*
michael, in *Dumfriesshire*; and at *Killin*, near
the head of *Loch-Tay*, in *Breadalbane*.

Cynofurus cœruleus. On *Creg-chaillech*, near *Kil-*
lin, in *Breadalbane*. Mr. *Stuart*.

Arundo

Arundo arenaria. On the shore of *Solway-Frith* above *Newby*, and by the sea-side about *Queens-ferry* and *Burrowstonefs*.

T E T R A N D R I A.

Galium boreale. At the *Black-wood*, about six miles above *Dumfries*.

Sanguisorba officinalis. Plentiful in many places of *Eskdale* and *Annandale*. Dr. *Burgefs*.

Cornus suecica. On the *Pentland* hills. Dr. *Hope*.

P E N T A N D R I A

monogynia.

Anchusa sempervirens. Not unfrequent in the *Lowlands* in waste places and near houses. Dr. *Burgefs*.

Primula farinosa. By the road side between *Linton* and *Broughton*, and about a mile from *Linton*, and sixteen from *Edinburgh*. Mr. *Yalden*.

Lyfimachia nummularia. In shady moist woods, as in the *Cleugh* call'd the *Neese-Linn*, about half a mile from the church of *Kirkmichael*.

Azalea

Azalea procumbens. Near the top of *Mal-gbyrdy*, in *Breadalbane*.

Samolus Valerandi. In several boggy places on the shore at *Priestside*, in the parish of *Ruthwell*.
*Dr. Burges*s.

Atropa Belladonna. Among the ruins of the abbey of *Holywood*. *Dr. Burges*s.

Solanum dulcamara. On the side of the burn in the footway through *Locker-Moss*, going from *Moufeward* to *Caerlaverock*.

Euonymus europæus. On a rock in *Edinburgh* park, observ'd by *Mr. Yalden*.

Convolvulus sepium. In the hedge on the side of the burn below the house of *Stank*, in the parish of *Ruthwell*, in *Annandale*.

Ribes nigrum. On the side of a little burn, betwixt *Arnisfield* town and *Lockerbridge*, about four miles from *Dumfries*.

D I G Y N I A.

Crithmum maritimum. On the sea cliffs at the *Ross* of *Balmangan*, and other places on the
shore

shore below *Kircudbright* ; also in the parish of *Kirkmaiden*, about four miles from the *Mull of Galloway*, between the *Mull* and *Kirkpatrick*.

Sium angustifolium. In wet ditches, as at the bridge on the high road between *Kirktown* and *Duncow*, in the parish of *Kirkmahoe* in *Nithsdale*.

Oenanthe fistulosa. In the marshy pastures betwixt the *Blackshaw*, in the parish of *Caerlaverock*, and the side of *Locker-water*. Dr. *Burgess*.

Phellandrium aquaticum. At the old place of *Corstorphine*, near *Edinburgh*. Mr. *Talden*.

Scandix odorata. In waste places, and near houses in the *Lowlands* frequent.—Among the ruins of the abbey of *Holywood*. Dr. *Burgess*.

Imperatoria ostruthium. In waste places frequent; also on the side of the *Tweed*, about half a mile above the old castle of *Drummelzier*, distant from any cultivated ground. Dr. *Burgess*.

TRIGYNIA.

Viburnum opulus. At *Finlarig* near the head of *Loch-Tay*. Mr. *Stuart*.

Sambucus

Sambucus ebulus. Near *Belzies* in the parish of *Tinwald* in *Annandale*. Dr. *Burges*s.—Also about *Finlarig* and *Comrie*. Mr. *Stuart*.

Sambucus nigra. A variety with lacinated leaves, at *Kirkmichael* place. Dr. *Burges*s.

Pentagynia.

Linum radiola. On *Lockmaben* common, by the road side above *Little Dormount*, and also on the sandy paths in the moor on the N. side of the road betwixt the *Brow* and the *Stank*, in the parish of *Ruthwell*. Dr. *Burges*s.

Sibbaldia procumbens. In the higher parts of a rocky romantic bason call'd *Corry-yaal*, amongst the mountains of *Glenco*, 900 feet above the level of the valley below.—Also upon *Maol-gblas* and other mountains in *Breadalbane*. Upon *Stuic-an-lochain* in *Glenlyon*, and upon *Ben-Achalader* in *Glenurchy*.

We have been inform'd it has likewise been discovered in the wood near *Broomholm*, about two miles below *Langholm* in *Eskdale*; if there be no mistake in this last information, it is very extraordinary that this alpine plant should descend into the *Lowland* woods.

HEXAN-

H E X A N D R I A

Monogynia.

Anthericum calyculatum. About *Corry-na-beich*, a rocky basin in the ascent of *Bidan-nam-bian*, the highest mountain in *Glenco*, which according to Mr. *Stuart's* observations, is 3150 feet above the level of the sea.

Juncus trifidus. Upon *Ben-Nevis* in *Lochaber*, supposed to be the highest mountain in *Scotland*.

Juncus triglumis. Upon *Craigneulie* near the head of *Loch-Tay*. Upon *Mal-gkyrdy* and *Malnan-tarmonach* in *Breadalbane*. Upon *Ben-Lomond*, and in mossy ground at the top of *Carn-dearg*, one of the lower heads of *Ben-Sguilert*, one of the highest mountains in *Glen-Creran*, in *Upper Lorn*. Also upon the mountains of *Glenco*, *Rannoch*, and *Glenlyon*, and almost all the higher mountains of *Breadalbane*, in wet mossy ground. VII. VIII. Mr. *Stuart*.

Juncus sylvaticus. At *Achlyne* near the head of *Loch-Tay*.

Juncus

A P P E N D I X.

1121

Juncus spicatus. On a mountain a little to the North of *Meggerny*, and on *Mal-gbyrdy* in *Breadalbane*. VIII.

Trigynia.

Rumex maritimus. On the shore of *Solway Frith* about the *Burn*, and near the salt-houses at *Priestside* in the parish of *Rutbwell*, not unfrequent. Dr. *Burges*s.

H E P T A N D R I A.

Trientalis europæa. In the woods of *Rannoch* frequent.

O C T A N D R I A

monogynia.

Epilobium angustifolium. Upon the rocks about *Finlarig* near the head of *Loch-Tay*; and together with *Pyrola secunda* and *rotundifolia* at the foot of *Craig-chaillech*, about 1000 feet above the level of *Loch-Tay*. Found likewise in the higher grounds of *Finlarig*, upon a rock just above the gully call'd *Eas-Fhionnlaraig*; but no where in greater plenty or higher perfection

than at *Ard-guillery* by the side of *Loch-Lutnaig*, near the military road which leads to *Callander* and *Sterling*—Dr. *Burgess* observ'd it also in the *Lowlands*, by the side of *Moffat* water, about a mile above *Drumcrief* in plenty.

Epilobium hirsutum. On the side of the *Burn*, close by the Manse of *Mousewald*. Dr. *Burgess*.

Epilobium alpinum. In great abundance near the top of all the high mountains in *Breadalbane*, and on the higher parts of *Corry-Yaal* in *Glenco*. Mr. *Stuart*.

Vaccinium oxycoccos. Found by Mr. *Stuart* at *Tullybancher*, half a mile from *Comrie*, and five miles from *Crief* in *Strath-Erne*; but no where in *Breadalbane*.

Trigynia.

Polygonum viviparum. About *Killin* at the head of *Loch-Tay*, frequent.

DECA N D R I A

Monogynia.

Andromeda polifolia. On *Dalsfibble* and *Stanemoor* mosses in the parish of *Kirkmichael* very plentifully.

fully. Dr. Burgess.—At Blair-Drummond moss near Sterling. Mr. Yalden.

Arbutus uva ursi. On the hills call'd the Hopes of Drummelzier, about six miles above Peebles. Dr. Hope.

Digynia.

Chrysoplenium alternifolium. About Killin frequent. Mr. Stuart. In shady moist places in the Lowlands, as in the Cleugh call'd the Neese-Linn, about half a mile North of Kirkmichael church. Dr. Burgess.—And upon the Pentland hills more common than the *C. oppositifolium*. Mr. Yalden.

Saxifraga stellaris. By the sides of the rivulets that run from Queensberry Hill. Dr. Burgess. In the Highlands every mountain produces it.

Saxifraga nivalis. In the clefts of the higher rocks of Ben-chruipen and Mal-grea; and in Glenlyon, among the rocks on the north side of Stùic-an-lochain, a mountain 1980 feet above the level of Miggerny. Mr. Stuart.

Saxifraga tridactylites. This is very rare in Scotland;
4 C 2

land; it has however been collected near *Inverness*. Dr. Hope.

Saxifraga hypnoides. On the moist rocks near the foot of the rivulet that runs down betwixt *Penbreck-hill* and *Queensberry*. Dr. Burgess—Upon the rocks of the *Highland* mountains it is a very common plant.

Dianthus deltoides. On *Blackford Hill*, a mile from *Edinburgh*, and very common upon the rocks all round *Edinburgh*. Mr. Yalden thinks this to be the only species found in that neighbourhood.

Trigynia.

Stellaria nemorum. On the lower side of *Glen-Ea* wood, in the parish of *Kirkmichael*, plentifully. Dr. Burgess.

Cherleria sedoides. Upon *Mal-grea* and *Mal-nan-tarmonach*, mountains situate betwixt *Breadalbane* and *Glenlyon*, the lowest of them 2500 feet above *Loch-Tay*. As also upon the top of *Ben-Achalader*, a mountain in the Braes of *Glenurcky*, 2400 feet high. Mr. Stuart.

Pentagynia.

Pentagynia.

Sedum rubens. *Flor. Scot.* p. 235. *Crassula rubens.*
Lin. syst. nat. edit. 13. p. 253. On the dry
 dykes of several enclosures about *Dumfries.*
Dr. Burgefs.

Sedum villosum. Between *Kilsith* and *Sterling* by
 the sides of the rivulets on the mountains, and
 on the *Lead-hills*; observ'd by Mr. *Teesdale* seedf-
 man in the *Strand London*, and a very ingeni-
 ous botanist.

D O D E C A N D R I A.

Reseda luteola. On the sides of the river *Nith*
 plentifully. *Dr. Burgefs.*

I C O S A N D R I A.

Monogynia.

Prunus insititia. In the woods of *Fourmerkland*
 and *Steelston* in the parish of *Holywood* frequent.
Dr. Burgefs.

Polygynia.

Rosa spinosissima. On the east side of the Burn
 that runs by the church of *Cumbertrees.* *Dr.*
Burgefs.

Rosa arvensis. In woods and hedges frequent in the *Lowlands.* Dr. *Burges.*

P O L Y A N D R I A,

Monogynia.

Chelidonium glaucium. On the shore of *Solway Frith*, about a mile to the west of *Newby.* Dr. *Burges.*

D I D Y N A M I A

Gymnospermia.

Ajuga pyramidalis. Upon *Ben-Nevis* in *Lochaber*, and plentifully in the Burn of *Killigower*, and Ord of *Caithness.* Dr. *Hope.*

Galeopsis galeobdolon. By *Haddington* near a garden wall. Dr. *Hope.*

Angiospermia.

Bartsia viscosa. In a sandy soil by the road side near *Arden-Caple* by *Loch-Goyl.* Dr. *Hope.*

Melampyrum sylvaticum. In the way from *Taymouth* to Lord *Breadalbane's* cascade, observ'd by Mr. *Yalden*, who communicated specimens. We were inform'd also by Mr. *Stuart* that it grows about *Finlarig*, at the head of *Loch-Tay*,
but

but we have not as yet received specimens from this last place. This is a much rarer plant than the *Melampyrum pratense*, but may be readily distinguish'd from it by its small yellow gaping flowers and intire leaves.

TETRADYNAMIA

Siliculosa.

Cochlearia danica. On *Cramond* island in the *Forth* in plenty. Mr. *Yalden*.

Iberis nudicaulis. In a field belonging to Lord Advocate *Montgomery*, at his estate of *Whim* near *New-Posso*. Dr. *Hope*.

Siliquosa.

Cardamine amara. At *Finlarig* near the end of *Loch-Tay*, observ'd by Mr. *Stuart*. In a spongy wet place under the bank at the farm-house call'd the *Wood*, in the parish of *Kirkmichael*. Dr. *Burges*.

Sisymbrium sylvestre. In several wet places on the side of the water of *Ea*, below *Kirkmichael* house.

Sisymbrium amphibium. In the Burn that runs into the water of *Locker*, opposite to the Manse of *Moufswald*. Dr. *Burges*s.

In *Didiston Loch* near *Edinburgh*. Mr. *Yalden*.

Sinapis alba. In waste places frequent, but probably not indigenous. Dr. *Burges*s.

Sinapis nigra. In corn fields at *Duncow*, about four miles above *Dumfries*. Dr. *Burges*s.

MONODELPHIA

Polyandria.

Althæa officinalis. Dr. *Burges*s informs me he was well assured that this plant grows in a wild state on the shore of *Solway Frith*, near *Ardbigland*.

Malva moschata. In the hedges a little above the church of *Kirkmahoe*. Dr. *Burges*s.

DIADELPHIA

Decandria.

Ulex europæus. At *Comrie* in *Strath-Ern*, but in no part of *Breadalbane*. Mr. *Stuart*.

Orobis

Orobus sylvaticus. About fifteen miles from *Edinburgh*, on a bank in the road to *Lanerk*.
Mr. *Yalden*.

Observ'd also by Dr. *Burges* in great plenty on a bank facing the *Tweed*, on the north side, about a quarter of a mile below the public house at the *Beild*. And on a hillock by the side of *Douglas* water, betwixt *Douglas* town and *Earl's Miln*.

Trifolium ornithopodioides. At *Maitland* bridge, between *Edinburgh* and *Musselburgh*. It delights to grow in a fine short dry pasture.

Trifolium alpestre. On the sides of *Glenkill* Burn, near the church of *Kirkmichael*. Dr. *Burges*.

S Y N G E N E S I A

Polygamia superflua.

Senecio viscosus. In the king's park at *Edinburgh*.
Mr. *Yalden*.

M O N O E C I A

Tetrandria.

Littorella lacustris. On the edge of the *Castle-Loch* by *Lochmaben*, plentifully. Dr. *Burges*.

CRYPTO-

CRYPTOGAMIA

Filices.

Osmunda crispa. About three miles south of
Moffat, in the road to *England*. Mr. *Yalden*.

Polypodium lonchitis. Upon the rocks above
Finlarig. Mr. *Stuart*.

Polypodium Phegopteris. In *Achmore* wood, at
the head of *Loch-Tay*.

Polypodium lobatum. *Huds. Fl. Ang. p. 390.*
Flor. Scot. 677. Close by *Moffat* well. Mr.
Yalden.

Polypodium rhæticum. *Flor. Scot. 678.* Upon
rocks and in woods about *Finlarig*. Mr. *Stuart*.

Polypodium dryopteris. At *Finlarig* and *Mal-*
gbyrdy, &c. frequent.

Musci.

Lycopodium clavatum. On *Pentland* hills, Mr.
Yalden.

Addition

Addition of ERSE and SCOTCH Names
of Plants.

Ligustrum vulgare. Privy Saugh. *Scotis australibus.*

Pinguicula vulgaris. Mòan. *Gaulis.* Steep-grafs, Earning-grafs. *Scotis austral.* The Lowlanders believe that the leaves of this plant eaten by cows induce a ropiness on the milk. Probably there may be some foundation for this opinion, considering the known effects of this plant when put into warm milk. See pag. 76.

Arundo phragmites. The Loch-Reed. *Scot. aust.*

Triticum repens. The Quicken. *Scot. aust.*

Ilex aquifolium. Hollin. *Scot. aust.*

Sambucus nigra. Bourtree or Bore-tree. *Scot. aust.*

Allium ursinum. Creamh. *Gaulis.*

Juncus squarrosus. Stool-Bent. *Scot. aust.*

Juncus articulatus. Lochan-nan-dav. *Gaulis* Sprett. *Scot. aust.*

Rumex acetosa. The Sowruck. *Sc. aust.*

Rumex acetosella. Sheep's Sowruck. *Sc. aust.*

Vaccinium myrtillus. Dearca. *Gaulis.*

Vaccinium vitis idæa. Baoileaga. *Gaulis.*

Erica cinerea. Fraoch-badain. *Gaulis.*

Orobus

Orobis tuberosus. Carmylie. Scot. aust.

Carduus ——— Foghenan, Cluaran. *Gaulis.*

Senecio Jacobæa. Bualan. *Gaulis.*

The stinking weed. Scot. aust.

Juniperus communis. Call'd in Arran, in the Erse language, *Beeora Leacra.*

Lycoperdon Bovista. The blind Man's Ball. Scot. aust.

DOUBTFUL

DOUBTFUL NATIVES,

Or such as have not yet come under the
Author's Inspection.

Pinguicula alpina. This is said to have been found in *Orkney*, and also between *Erwin* and *Air*, in moist ground plentifully. That found near *Air*, was described as having a stalk two inches high, a blue flower smaller than that of *P. vulgaris*, and a conical horn or *nectarium* shorter than the petal.

We suspect this to be our *P. villosa*, p. 77. for the *P. alpina* produces a white flower, having a yellow spot on the lower lip.

Phleum alpinum. Said to be found on *Craigneulie* above *Killin*, the hill which produces the garnets. If it be the true kind, it bears a short oval spike, about three-quarters of an inch long, of a dark-purplish color, the valves of the *calyx* bearded.

POA aquatica. Said to be found at the foot of *Edinburgh-castle* rock, but search'd for in vain.

Cornus

Cornus sanguinea. We have been inform'd that this is sometimes found on the sides of the mountains, but we never found it ourselves, or saw the specimens of it.

Rhamnus Frangula. Said to have been found in some woods in the *Lowlands*, but no particular place mentioned.

Ribes grossularia. Sometimes found near houses, but probably escaped from the gardens.

Staphyllæa pinnata. Found sometimes in *Breadalbane*, near houses and gardens. We suspect it to be an outcast.

Juncus acutus. Said to be found on the seashores in loose sands, but did not fall under our observation.

Rumex patientia. This is reported to have been found and gathered in a wild state near *Moffat*. We suspect it to be an outcast, as it is properly a southern plant, and a native of *Italy*.

Scleranthus polycarpus. Said to have been found at *Broomholm* near *Langholm* in *Eskdale*, and described to us in the following manner.

“ A plant

A plant much less than the *Scleranthus annuus*,
 “ the stalk more divaricated, and a little
 “ downy; the *calyces* disposed upon the stalk
 “ throughout its whole length, and not in
 “ clusters at the summit; the segments open
 “ and very sharp, the belly externally fur-
 “ rowed, the margins not membranaceous as
 “ in *S. annuus*.”

Spergula saginoides. This we have been inform'd
 was gathered on *Alva* hills, but we have not
 seen the specimens. Q. Whether it be not our
S. laricina? p. 244.

Euphorbia Esula. Said to have been found
 growing plentifully on a bank to the south of
 Lord *Abercorne*'s house, about a mile from
Edinburgh, by Mr. *Benjamin Charlesworth*; but
 as we have seen no specimens, we can deter-
 mine nothing concerning it.

Mentha Pulegium. Said to be found by the side
 of the springs on the *Pentland* hills. If there
 be no mistake in this information, the plant
 must certainly be a native.

Galeopsis Ladanum. We received information
 that this was found in *Breadalbane*, but we
 suspect

suspect that the *G. tetrabit* was mistaken for it.

Draba muralis. This is reported to have been found in *Scotland*, but the place is not mentioned, nor have we seen specimens of the plant.

Cochlearia armoracia. Mentioned as a native of *Scotland* by *Sibbald*, but the place not named; nor have we heard that it has been found in a wild state since his time.

Iberis amara. Reported to grow in the fields between *Hamilton* and *Glasgow*.

Lunaria rediviva. Said to grow in *Breadalbane*. We suspect it to be the outcast of gardens.

Hesperis matronalis. Mentioned to grow by a rivulet's side near *Glen-Corse*.

Brassica campestris. Said to grow in corn-fields in the islands of *Bute* and *Arran*. We observ'd it not ourselves.

Geranium moschatum. On the dry dykes at the *Stank* in the parish of *Ruthwell* in *Annandale*.
Q. Whether this be not the *G. cicutarium*?

Lathyrus

Lathyrus tuberosus. In Dr. Hope's collection,
but where collected he does not know.

Lathyrus heterophyllus. Said to have been found
in Scotland. We suspect the *Orobis tuberosus*
(a variety with narrow leaves) to be mistaken
for it.

Hieracium præmorsum. In Dr. Hope's collection;
but where gathered uncertain.

E M E N D A T I O N S.

Veronica alpina. p. 72. This I was inform'd was discovered upon the *Highland* mountains, and upon the credit of others inserted it as a native; but a view of a specimen discovered it to be only a slight variety of the *V. serpyllifolia*.

Pinguicula villosa. p. 77. Add to the description this—The *nectarium* is shorter than the petal, nearly cylindrical and obtuse.

Schoenus ferrugineus. p. 86. Erase this entirely. The plant taken for it, proved to be only a smooth ferrugineous variety of *S. compressus*, having a stalk nearly round. See our figure of it.

Elymus arenarius. p. 108. Erase this totally. It prov'd to be only the *Arundo arenaria*. p. 107.

Dipsacus pilosus. p. 113. We suspect ourselves deceived in this being a native of *Scotland*, as

no particular place of growth was mentioned to us, and we found it not ourselves.

Aphanes arvensis. p. 121. Correct the generic character. Instead of *Cal.* 8-fidus, write *Cal.* 4-fidus.

Chlora perfoliata. p. 200. We suspect some deception in this plant being term'd a native of *Scotland*, as we never found it.

Butomus umbellatus. p. 211. Our intelligence of this being a native is but ill-founded.

Dianthus glaucus. p. 225. This, which is said to have been found in the king's park at *Edinburgh*, is imagin'd by Mr. *Yalden* to have been no other than a variety of *D. deltoides*, which he thinks is the only species found wild about *Edinburgh*.

Dianthus arenarius. p. 226. We are inclin'd to suspect *Sibbald's* authority for this plant growing on a hill near *Pertb*; and apprehend the *D. deltoides* was mistaken for it. We wish some neighbouring botanist would remove the doubt.

Cherleria sedoides. p. 232. Instead of the reference

rence to *our* figure of this plant, consult *Pennant's Tour and Voyage to the Hebrides* for it, and also *Jacquin. Fl. Austriac. t. 284. opt.*

Arenaria verna. p. 231. The plant here described for the *A. verna*, is suppos'd by Dr. *Solander* to be rather the *A. laricifolia* of *Linnaeus*.

Sedum rubens. p. 335. In the 13th edition of the *Syst. nat. Lin. (p. 253.)* this plant is call'd *Crassula rubens*; but the generic characters of *Crassula* do not agree with our species, for *that* we intend is truly and properly a *Sedum*.

Lychnis viscaria. p. 239. For it's place of growth insert *upon the rocks in Edinburgh park*, instead of *at the Hermitage near Edinburgh*.

Reseda lutea, p. 249. We suspect the *Reseda luteola* to have been mistaken for this.

Rosa suavisolia. p. 262. In the 13th edit. of the *Syst. nat. Lin. (p. 393.)* this plant of ours is named *R. rubiginosa*, and is well figured by *Jacquin* in his elegant work entitled *Flora Austriaca. t. 50.*

Lathyrus palustris, p. 392. Of this we saw no specimens,

specimens, and we are inclined to suspect that the *Orobis tuberosus*, which sometimes varies with narrow lanceolate leaves, was mistaken for it.

Trifolium striatum. p. 408. Since writing the description of this, we have sown the seeds, and found the difference between this and *T. scabrum* to be permanent.

Tussilago farfara. p. 475. Instead of tinder being made of the *roots* of this plant, it should rather have been said, of the *downy substance under the leaves*, which boil'd in a *lixivium* with a little saltpetre, makes excellent tinder.

A Catalogue of PLANTS growing in *Edinburgh Park*, communicated by Mr. *Yalden*.

MONANDRIA.

Hippuris vulgaris

Callitriche verna

———— *autumnalis*

DIANDRIA.

Veronica officinalis.

———— *serpyllifolia*.

———— *beccabunga*.

———— *scutellata*.

———— *chamædrys*.

———— *arvensis*.

———— *agrestis*.

———— *hederifolia*.

Salvia verbenaca.

Anthoxanthum odoratum.

TRIANDRIA.

Valeriana officinalis.

———— *locusta*.

Iris Pseudacorus.

Scirpus palustris.

Nardus stricta.

Phalaris arundinacea.

Phleum pratense.

———— *nodosum*.

Alopecurus pratensis.

———— *geniculatus*.

Dactylis glomeratus.

Agrostis alba.

Aira aquatica.

———— *cæspitosa*.

———— *flexuosa*.

———— *montana*. var. *Præcedentis*.

———— *præcox*.

Briza media.

Poa pratensis.

———— *compressa*.

———— *annua*.

———— *rigida*.

———— *cristata*.

Festuca ovina.

———— *duriuscula*.

Festuca

*Festuca bromoides.**Bromus mollis.*———— *sterilis.**Avena elatior.*———— *flavesens.**Arundo phragmites.**Lolium perenne.**Triticum repens.**Hordeum murinum.**Cynosurus cristatus.**Montia fontana.*

TETRANDRIA.

*Scabiosa succisa.**Plantago major.*———— *lanceolata.**Sherardia arvensis.**Asperula odorata.**Galium verum.*———— *palustre.*———— *uliginosum.* var.
montanum.———— *aparine.**Alchemilla vulgaris.**Aphanes arvensis.**Potamogeton densum.*———— *crispum.*———— *marinum?**Sagina procumbens.*

PENTANDRIA.

Myosotis scorpioides. γ. δ.*Lycopsis arvensis.**Echium vulgare?**Primula veris.**Menyanthes trifoliata.**Convolvulus arvensis.**Hyoscyamus niger.**Lonicera periclymenum.**Campanula rotundifolia.*———— var. *flore albo.**Euonymus Europæus.**Ribes Uva crispa.***Hedera Helix.**Gentiana Amarella.**Ulmus campestris.* β.*Hydrocotyle vulgaris.**Tordylium nodosum.**Caucalis Anthriscus.**Conium maculatum.**Heracleum sphondylium.**Sium latifolium.**Bunium bulbocastanum.**Scandix anthriscus.**Chærophyllum sylvestre.**Pimpinella saxifraga.*

* A doubtful native.

Sambucus nigra.
Alfina media.
Parnassia palustris.
Linum catharticum.

HEXANDRIA.

Allium vineale.
Juncus conglomeratus.
 ——— *effusus.*
 ——— *articulatus.*
 ——— *campestris.*
Triglochin palustre.
Rumex acutus.
 ——— *crispus.*
 ——— *obtusifolius.*
 ——— *acetosa.*
 ——— *acetosella.*
Alisma Plantago Δ.

OCTANDRIA.

Epilobium palustre.
Vaccinium myrtillus.
Erica cinerea.
Polygonum amphibium.
 ——— *Persicaria.*
 ——— *aviculare.*

DECANDRIA.

Saxifraga granulata.

Saxifraga hypnoides.
Dianthus deltoides.
Cucubalus Beben.
Stellaria holostea.

——— *graminea.*

——— *var. γ.*

Arenaria serpyllifolia.

——— *verna ?*

Sedum acre.

Oxalis acetosella.

Lychnis Flos cuculi.

——— *viscaria.*

——— *dioica.*

Cerastium vulgatum.

——— *viscosum.*

DODECANDRIA.

Reseda luteola.

ICOSANDRIA.

Prunus spinosa.

Spiræa Filipendula.

——— *Ulmaria.*

Rosa spinosissima

——— *villosa.*

——— *canina.*

Rubus Idæus.

——— *cæsius.*

——— *fruticosus.*

Potentilla

Potentilla *anserina*.
 ————— *argentea*.
 ————— *verna*.
 Tormentilla *erecta*.
 Geum *urbanum*

POLYANDRIA.

Papaver *argemone*.
 ————— *Rhæas*.
 ————— *dubium*.
 Cistus *Helianthemum*.
 Ranunculus *Flammula*.
 ————— *var. β*.
 ————— *repens*.
 ————— *bulbosus*.
 ————— *acris*.
 ————— *sceleratus*.
 ————— *hederaceus*.
 ————— *aquatilis*.
 ————— *Ficaria*.
 Caltha *palustris*.

DIDYNAMIA.

Teucrium *Scorodonia*.
 Mentha *aquatica*.
 Glecoma *hederacea*.
 Lamium *album*.
 ————— *rubrum*.

———— *amplexicaule*.
 Galeopsis *tetralix*.
 Stachys *palustris*.
 Ballota *nigra*.
 Clinopodium *vulgare*.
 Thymus *serpyllum*.
 Prunella *vulgaris*.
 Rhinanthus *Crista galli*.
 Euphrasia *officinalis*.
 Scrophularia *nodosa*.

TETRADYNAMIA.

Draba *verna*.
 Thlaspi *Bursa pastoris*.
 Cheiranthus *cheiri*.
 Erysimum *officinale*.
 Brassica *Erucastrium*?
 Turritis *hirsuta*.
 Arabis *thaliana*.
 Cardamine *pratensis*.
 ————— *hirsuta*.
 Sisymbrium *Nasturtium Δ*.
 ————— *amphibium*.
 Sinapis *nigra*.

MONADELPHIA.

Geranium *cicutarium β*.
 ————— *robertianum*.
 Geranium

Geranium lucidum.

———— *molle.*

———— *dissectum.*

———— *sanguineum.*

Malva sylvestris.

DIADELPHIA,

Polygala vulgaris,

Ulex europæus.

Ononis spinosa.

———— *arvensis.*

Anthyllis vulneraria,

Orobus tuberosus.

Vicia sylvatica.

———— *sepium.*

———— *latbyroides.*

Ervum hirsutum.

Astragalus arenarius.

Trifolium repens.

———— *pratense.*

———— *arvense.*

———— *striatum.*

———— *agrarium.*

———— *procumbens.*

Medicago lupulina.

Lotus corniculatus.

POLYADELPHIA.

Hypericum perforatum.

SYNGENESIA.

Tragopogon pratense.

Sonchus oleraceus.

Lactuca virosa.

Leontodon Taraxacum.

———— *autumnale.*

Hieracium Pilosella.

———— *murorum.*

Crepis tectorum.

Hypochaeris radicata.

Lapsana communis.

Arctium Lappa.

Serratula arvensis.

Carduus lanceolatus.

———— *marianus.*

Artemisia vulgaris.

Senecio vulgaris.

———— *viscosus.*

———— *Jacobæa.*

Bellis perennis.

Chrysanthemum Leucan-
themum.

Matricaria Chamomilla.

Achillea Millefolium.

Centaurea Jacea.

Filago montana.

Viola canina.

GYNANDRIA.

Orchis maculata.

MONO-

MONOECIA.

Lemna trisulca.—— *minor.**Sparganium erectum.**Carex muricata.*—— *caespitosa.*—— *hirta.**Betula alnus.**Urtica dioica.**Myriophyllum verticillatum.**Asplenium Adiantum nigrum.**Polypodium vulgare.*—— *Filix mas.*—— *Filix femina.*—— *cristatum.**Polytrichum commune.*—— *striatum.**Mnium palustre.*—— *hygrometricum.*—— *annotinum.**Bryum pomiforme.*—— *extinctorium.*—— *rurale.*—— *murale.*—— *hypnoides.*—— *argenteum.*—— *pulvinatum.**Hypnum bryoides.*—— *taxifolium.*—— *proliferum.*—— *cupressiforme.*—— *aduncum.*—— *dendroides.*—— *cuspidatum.*—— *velutinum.*—— *sciuroides.*—— *gracile.*

DIOECIA.

*Salix viminalis.**Mercurialis perennis.*

POLYGAMIA.

*Holcus lanatus.**Valantia cruciata.**Atriplex patula.**Fraxinus excelsior.*

CRYPTOGAMIA.

*Equisetum limosum.**Acrostichum septentrionale**Pteris aquilina.**Asplenium trichomanes.*—— *ruta muraria.**Jungermannia*

Jungermannia asplenoides. Lichen *horizontalis.*

———— *bidentata.* ——— *caninus.*

———— *dilatata.* ——— *miniatus.*

———— *tamariscifolia.* ——— *cocciferus.*

———— *pyxidatus.*

Marchantia polymorpha. ——— *rangiferinus.*

Lichen *geographicus.* ——— *furcatus.*

———— *calcareus.* ——— *fragilis.*

———— *parellus.* Chara *flexilis.*

———— *fagineus.* Byssus *flos aquæ.*

———— *candelarius.* ——— *velutina.*

———— *ater.* ——— *saxatilis.*

———— *centrifugus.* ——— *lactea.*

———— *saxatilis.* Agaricus *finetarius.*

———— *olivaceus.* Peziza *scutellata.*

———— *parietinus.* Clavaria *muscoïdes.*

———— *pullus.* Lycoperdon *Bovista.*

———— *ciliaris.* ——— var. *pedun-*

———— *fraxineus.* *culata.*

———— *caperatus.*

The following is a Catalogue of such PLANTS, mentioned in this Work, as are figured in Mr. Curtis's *Flora Londinensis*, a Book now publishing in monthly Numbers, and executed in so accurate and elegant a Manner, that we cannot help lamenting the Brevity of the subsequent List.

	Plate		Plate
DIANDRIA.		PENTANDRIA.	
Veronica agrestis	1	Anagallis arvensis	12
Veronica chamædrys	2	Convolvulus sepium	13
Veronica serpyllifolia	3	Solanum Dulcamara	14
Verbena officinalis	4 ¹	Lonicera Periclymenum	15
Anthoxanthum odoratum	4	Hedera Helix	16
		Conium maculatum	17
TRIANDRIA.		Æthusa Cynapium	18
Aira aquatica	5	Scandix Anthriscus	19
Poa annua	6	Alfene media	20
Festuca fluitans	7	OCTANDRIA.	
Bromus mollis	8	Erica tetralix.	21
Bromus sterilis	9	Polygonum Bistorta	22
TETRANDRIA.		Polygonum Persicaria	23
Dipsacus pilosus	10	Polygonum	

	Plate		Plate
Polygonum Hydropi-		Euphrasia odontites	44
per --	26	Antirrhinum Linaria	47
Polygonum aviculare	27	Digitalis purpurea	48
ENNEANDRIA.		TETRADYNAMIA.	
Butomus umbellatus	29	Draba verna	49
DECANDRIA.		Thlaspi Bursa pastoris	50
Saxifraga granulata	30	MONADELPHIA.	
Sedum acre	32	Geranium cicutarium	51
Lychnis Flos cuculi	33	Geranium Robertianum	52
Cerastium aquaticum	34	DIADELPHIA.	
DODECANDRIA.		Orobis tuberosus	53
Euphorbia peplus	35	Ervum hirsutum	54
Euphorbia Helioscopia	36	Ervum tetraspermum	55
ICOSANDRIA.		POLYADELPHIA.	
Potentilla reptans.	37	Hypericum pulchrum	56
POLYANDRIA.		Hypericum perfora-	
Ranunculus bulbosus	38	tum	57
Ranunculus acris	39	SYNGENESIA.	
Caltha palustris	40	Leontodon Taraxacum	58
DIDYNAMIA.		Lapsana communis	59
Lamium rubrum	42	Erigeron acre	60
Thymus acinos	43	Senecio vulgaris	61
		Bellis perennis	62
		Viola	

	Plate		Plate
Viola odorata	63	Polypodium vulgare	68
Viola hirta	64	Bryum scoparium	69
Viola tricolor	65	Bryum undulatum	70
		Bryum hornum f. Mni-	
		um —	71
Asplenium Scolopen-		Hypnum proliferum	72
drium	67		

CRYPTOGAMIA.

F I N I S.

L A T I N
 C R I T I C A
 A B
 A B

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172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509	1510	1511	1512	1513	1514	1515	1516	1517	1518	1519	1520	1521	1522	1523	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539	1540	1541	1542	1543	1544	1545	1546	1547	1548	1549	1550	1551	1552	1553	1554	1555	1556	1557	1558	1559	1560	1561	1562	1563	1564	1565	1566	1567	1568	1569	1570	1571	1572	1573	1574	1575	1576	1577	1578	1579	1580	1581	1582	1583	1584	1585	1586	1587	1588	1589	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	1600	1601	1602	1603	1604	1605	1606	1607	1608	1609	1610	1611	1612	1613	1614	1615	1616	1617	1618	1619	1620	1621	1
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L A T I N I N D E X

O F T H E

G E N E R A.

The common Figures denote the page; the Roman Numerals the volume. Where no Roman Numerals are annex'd, the first volume is meant.

A.		Page		Page
A CER. II.	—	638	Alopecurus.	91
Achillea.	—	495	Alfina.	172
Acrostichum. II.	-	656	Althæa.	373, & app. 1128
Adiantum. II.	-	679	Anagallis.	139
Adoxa.	-	209	Anchusa.	133, & app. 1116
Ægilops. II.	-	632	Andromeda.	214, & app. 1122
Ægopodium.	-	170	Anemone.	284
Æthusa.	-	165	Angelica.	160
Agaricus. II.	- 1008—	1030	Anthemis.	493
Agrimonia.	-	247	Anthericum.	181, & app. 1120
Agrostemma.	-	238	Anthoxanthum.	81
Agrostis.	- 92, & app.	1081	Anthyllis.	387
Aira.	- 94, & app.	1082	Antirrhinum.	328
Ajuga.	302, & app.	1126	Aphanes.	121, & app. 1139
Alchemilla.	-	120	Apium.	169
Alisma.	-	193	Aquilegia.	284
Allium.	-	179	Arabis.	358
		4 E	Arbutus.	215, & app. 1123
			Arctium.	

LATIN INDEX.

	Page
Arctium.	445
Arenaria. 229, & app. 1102,	1140
Artemisia.	466
Arum.	528
Arundo. 106, & app. 1116	
Asperugo.	135
Asperula.	115
Asplenium. II.	660—666
Aster.	482
Astragalus.	399
Athamanta. 157, & app. 1095	
Atriplex. II.	635
Atropa.	144, & app. 1117
Avena.	105
Azalea. 139, & app. 1117	
B.	
Ballota.	314
Bartia. 321, & app. 1126	
Bellis.	487
Berberis.	178
Beta.	150
Betonica.	311
Betula. II.	572—577
Bidens.	461
Blasia. II.	app. 1112
Boletus. II.	1031—1040
Brassica. 359, app. 1136	
Briza. 99, & app. 1084	
Bromus. 103, & app. 1086, 1087	
Bryonia. II.	590
Byum. II. 716, 738, & app. 1110	

	Page
Bunias.	363
Bunium.	156
Butomus. 211, app. 1139.	
Byssus. II.	999—1007
C.	
Callitriche.	70
Caltha.	298
Campanula.	141
Cardamine. 347, & app. 1104, 1127	
Carduus.	450—458
Carex. II.	541—568
Carlina.	460
Carpinus. II.	585
Carum.	169
Caucalis.	135
Centaurea.	498
Centunculus.	118
Cerastium.	240
Ceratophyllum. II.	580
Chærophyllum.	167
Chara. II.	535
Cheiranthus.	357
Chelidonium. 278, & app. 1126	
Chenopodium.	147, 150
Cherleria. 232, & app. 1124, 1139	
Chlora.	200, app. 1139
Chrysanthemum.	488
Chrysofplenium. 219, & app. 1123	
Cicuta.	164
Circæa.	80, & app. 1115
Cistus.	281
Clavaria. II.	1056, 1064
Clinopodium.	

LATIN INDEX.

	Page
Clinopodium. -	316
Cochlearia. 342, & app. 1127, 1136	
Colchicum. -	192
Comarum. -	276
Conferva. II. -	976, 998
Conium. -	157
Convallaria. -	182
Convolvulus. 140, & app. 1117	
Conyza. -	473
Cornus. 119, & app. 1116, 1134	
Corylus. II. -	586
Cotyledon. -	233
Crambe. -	364
Cratægus. -	255
Crepis. -	440
Crithmum. 158, & app. 1117	
Cucubalus. -	226
Cuscuta. II. -	app. 1090
Cynoglossum. -	133
Cynosurus. 100, & app. 1115	

D.

Dactylis. -	99
Daphne. -	205
Daucus. 156, & app. 1095	
Dianthus. 225, & app. 1124, 1139	
Digitalis. -	330
Dipsacus. -	113, app. 1138
Doronicum. -	485
Draba. -	337, app. 1136
Drosera. -	175, & app. 1098
Dryas. -	274

E.

	Page
Echium. -	136
Elymus. -	108. app. 1138.
Empetrum. II. -	612
Epilobium. 197, & app. 1121, 1122	
Equisetum. II. -	646
Erica. -	203
Erigeron. -	474
Eriocaulon. II. -	569
Eriophorum. 89, & app. 1080	
Ervum. —	397
Eryngium. —	153
Erysimum. —	354
Evonymus. -	145, & app. 1117
Eupatorium. —	464
Euphorbia. -	249, & app. 1135
Euphrasia. -	323

F.

Fagus. II. -	584
Festuca. 101, & app. 1085	
Filago. -	501
Fontinalis. II. -	694
Fragaria. -	267
Fraxinus. II. -	641
Fucus. II. -	901—966
Fumaria. —	379

G.

Galeopsis, 310, & app. 1126, 1135	
Galium, 115, & app. 1089, 1116	
Genista. —	384

Gentiana.

LATIN INDEX.

	Page		Page
Gentiana.	152	Iris.	86, et <i>app.</i> 1078
Geranium.	366, et <i>app.</i> 1106, 1136	Isoetes. II.	683
Geum.	273	Juncus.	183, et <i>app.</i> 1099, 1100, 1120, 1134
Glaux.	147	Jungermannia. II.	769—791
Glecoma.	307	Juniperus. II.	623
Gnaphalium.	470. et <i>app.</i> 1109		
		L.	
H.		Lactuca.	429
Hedera.	146, et <i>app.</i> 1094	Lamium.	308
Helleborus.	297	Lapsana.	444
Helvella. II.	1047	Lathræa.	326
Heracleum.	158	Lathyrus.	391. <i>app.</i> 1137. 1140
Hesperis. II.	app. 1136	Lavatera.	374
Hieracium.	434—440, <i>app.</i> 1137	Lemna. II.	537
Hippuris.	70	Leontodon.	432
Holcus. II.	631	Leonurus.	316
Hordeum.	108	Lepidium.	339
Humulus. II.	615	Lichen. II.	800—898
Hyacinthus.	182, et <i>app.</i> 1099	Ligusticum.	159
Hydnum. II.	1041	Ligustrum.	72, et <i>app.</i> 1131
Hydrocharis II.	622	Limosella.	331
Hydrocotyle.	153	Linum.	173. et <i>app.</i> 1119
Hyoscyamus.	144	Lithospermum.	132
Hyoseris.	442	Littorella. II.	571, et <i>app.</i> 1129
Hypericum.	415—421	Lobelia.	505
Hypnum. II.	739—768, et <i>app.</i> 1111	Lolium.	107
Hypochæris.	442	Lonicera.	143
		Lotus.	411
I.		Lunaria. II.	app. 1136
Iasione.	504	Lychnis.	239, et <i>app.</i> 1103, 1140
Iberis.	346, et <i>app.</i> 1127, 1136	Lycoperdon. II.	1064—1070
Ilex.	121	Lycopodium II.	685—690, et <i>app.</i> 1130
Imperatoria.	168, et <i>app.</i> 1118		
Inula.	484, et <i>app.</i> 1107		

LATIN INDEX.

	Page
Lycopus.	79
Lycopsis.	135
Lyfimachia.	138, et app. 1116
Lythrum.	247

M.

Malva.	374, et app. 1128
Marchantia. II.	793
Marrubium.	315
Matricaria.	490
Medicago.	412
Melampyrum.	324, et app. 1126
Melica.	95
Mentha.	304, et app. 1104, 1135
Menyanthes.	137, et app. 1093
Mercurialis. II.	620
Milium.	92
Mnium. II.	705—715
Monotropa.	214
Montia.	110
Mucor. II.	1071—1074
Myagrurn.	336
Myosotis.	132
Myosurus.	176
Myrica. II.	613
Myriophyllum. II.	581

N.

Nardus.	90
Nepeta.	304
Nymphaea.	282

O.

Oenanthe.	161, et app. 1118
-----------	-------------------

Page.

Ononis.	386
Onopordum.	459
Ophioglossum. II.	651
Ophrys.	522
Orchis.	512—518
Origanum.	317
Ornithogalum.	180
Ornithopus.	399
Orobanche.	332
Orobus.	388, et app. 1129
Osmunda. II.	652, et app. 1130
Oxalis.	237

P.

Papaver.	279
Parietaria. II.	634
Paris.	209
Parnassia.	172
Pedicularis.	326
Peplis.	187
Peziza. II.	1048, 1055
Phalaris.	90
Phallus. II.	1043
Phascum. II.	693
Phellandrium.	163, et app. 1118
Phleum.	91, et app. 1080, 1133
Pilularia. II.	682
Pimpinella.	169
Pinguicula.	76, et app. 1131, 1133, 1138
Pinus. II.	587
Plantago.	117, et app. 1089
Poa.	96, et app. 1083, 1084, 1133
Polygala.	4 E 3

LATIN INDEX.

	Page
Polygala. —	381
Polygonum. — 206, et <i>app.</i> 1122	
Polypodium. II. 667—678, et <i>app.</i> 1130	
Polytrichum. II. — 698—704	
Populus. II. —	616
Potamogeton. 121, et <i>app.</i> 1091	
Potentilla. —	268
Prenanthes. —	431
Primula. - 136, et <i>app.</i> 1116	
Prunella. --	321
Prunus. 253, et <i>app.</i> 1125	
Pteris. II. -	657
Pulmonaria. —	134
Pyrola. —	218
Pyrus. —	258

Q.

Quercus II -	581
--------------	-----

R.

Ranunculus. —	287
Raphanus. —	362
Reseda. 248, et <i>app.</i> 1125, 1140	
Rhamnus. II. <i>app.</i> 1092, 1134	
Rhinanthus. -	322
Rhodiola. II. —	619
Ribes. 146, et <i>app.</i> 1117, 1134	
Riccia. II. —	799
Rosa. 260, et <i>app.</i> 1103, 1125, 1140	
Rubus. -	263
Rumex. 183, et <i>app.</i> 1121, 1134	
Ruppia. 124, et <i>app.</i> 1091	

	S.	Page
Sagina. -		125
Salicornia. —		69
Salix. II. -		595—611
Salsola. -		151
Salvia. -		79
Sambucus, 171, et <i>app.</i> 1098, 1119		
Samolus. 142, et <i>app.</i> 1117		
Sanguisorba. 119, et <i>app.</i> 1116		
Sanicula. -		154
Satyrium. -		519
Saxifraga. 220, et <i>app.</i> 1123, 1124		
Scabiosa. -		114
Scandix. 166, et <i>app.</i> 1118		
Schœnus. 86, et <i>app.</i> 1115, 1138		
Scilla. -		181
Scirpus. 87, et <i>app.</i> 1078, 1080, 1115		
Scleranthus. 225, et <i>app.</i> 1134		
Scrophularia. -		329
Scutellaria. -		320
Sedum. 234, et <i>app.</i> 1125, 1140		
Sempervivum. -		251
Senecio. - 478, et <i>app.</i> 1129		
Serapias. -		526
Serratula. -		447
Sherardia. -		114
Sibbaldia. 175, et <i>app.</i> 1119		
Silene. - 227, et <i>app.</i> 1101		
Sinapis. - 360, et <i>app.</i> 1128		
Sison. - 161, et <i>app.</i> 1096		
Sisymbrium. 350, et <i>app.</i> 1127, 1128		
Sium. 160, et <i>app.</i> 1095, 1118		
Smyrnium. —		168
Solanum. — 145 et <i>app.</i> 1117		
Solidago.		

LATIN INDEX.

	Page
Solidago. — —	482
Sonchus. — —	427
Sorbus. — —	256
Sparganium. II. — —	539
Spartium. — —	382
Spergula. - 243, <i>app.</i>	1135
Sphæria. II. — — <i>app.</i>	1113
Sphagnum. II. — —	691
Spiræa. — —	259
Splachnum. II. — —	696
Stachys. — —	312
Staphylea. II. — — <i>app.</i>	1134
Statice. 173, et <i>app.</i>	1098
Stellaria. — 228, et <i>app.</i>	1124
Subularia. — —	337
Symphytum. 134, et <i>app.</i>	1091

T.

Tanacetum. — —	465
Targionia. II. — —	792
Taxus. II. — —	626
Teucrium. — —	303
Thalictrum. — —	285
Thlaspi. — —	340
Thymus. — —	318
Tilia. — —	280
Tordylium. — —	154
Tormentilla. — —	272
Tragopogon. — —	426
Tremella. II. — —	898
Trichomanes. II. — —	681
Trientalis. 194, et <i>app.</i>	1121

	Page
Trifolium. 402, 410, et <i>app.</i>	1129, 1141
Triglochin. — —	191
Triticum. — —	109
Trollius. — —	295
Turritis. — —	358
Tussilago. 475, et <i>app.</i>	1141
Typha. II. — —	538

U.

Ulex. - 385, et <i>app.</i>	1128
Ulmus. 151, et <i>app.</i>	1094
Ulva. II. — —	966—976
Urtica. II. — —	578
Utricularia. 77, et <i>app.</i>	1115

V.

Vaccinium. 200, et <i>app.</i>	1100, 1101, 1122
Valantia. II. — —	633
Valeriana. — —	85
Verbascum. — —	143
Verbena. — —	78
Veronica. 72—76, et <i>app.</i>	1077, 1138
Viburnum. - 170, et <i>app.</i>	1118
Vicia. — —	393
Vinca. — —	147
Viola. — 506, et <i>app.</i>	1109

Z.

Zannichellia. II. — —	534
Zostera. — —	530

ENGLISH and SCOTCH INDEX

OF THE

NAMES of PLANTS.

A.		Page
A DDER's Tongue. II.	-	651
Agaric. II.	1008—1030	
Agrimony.	—	247
— Dutch	—	464
— Hemp.	461, 462, 464	
Aikraw.	—	851
Alder, common. II.	—	576
— berry-bearing, II.	1134	
Alexanders.	—	168
Allseed.	150, 174	
Alkanet, bastard.	—	133
— evergreen.	—	133
Allgood.	—	147
All-heal, Clown's.	—	313
— Petty.	—	314
Andromeda, marsh.	—	214
Angelica.	—	160
Anemone.	—	284
Anthericum.	—	181
B.		
Apple-tree.	—	258
Arbutus.	—	215
Arcel.	—	818
Archangel.	308, 309, 311	
Ar-nuts.	—	105
Arsmart.	207, 208	
Ash-tree. II.	—	641
— mountain.	—	256
Ashweed.	—	170
Asp. Aspen. II.	—	617
Asphodel.	—	181
Astragalus, filken	—	401
Avens.	—	273, 275
Awlwort.	—	337
Azalea.	—	139
Badderlocks. II.	—	938
Balderry.	—	517
Barberry.	—	178
Barley,		

ENGLISH and SCOTCH INDEX.

	Page
Barley, wall. —	109
Basil. —	317, 319
Bawd-Money. —	157
Beam-tree, white. —	255
Bear-berries. —	216
Bear Whortle-berries. —	216
Bedstraw. —	115, 116
Beech-tree. II. —	584
—— horse. II. —	585
Beet. —	150
Bell-flower. —	141
Belt, sea. II. —	940
Bent. —	107
Bent-grafs. —	93
Betony, Paul's. —	73
—— Wood. —	311
Bill-berries. —	201
Bind-weed. —	140
—— black. —	209
Birch-tree. II. —	572
—— dwarf. II. —	575
Bird's-cherry. —	253
—— eye. —	137
—— foot. —	399
—— foot Trefoil. —	403
—— nest. —	156
—— nest Ophrys. —	522
Birk. —	572
Bistort. —	206
Bitter-sweet. —	145
Blafia. II. —	1112
Blind-man's Ball. II. —	1132
Blite. —	148—150

	Page
Blue-bottles. —	499
Blue-bonnets. —	499
Bog-rush. —	86, 87
Boletus. II. —	1031—1039
Bonnets, blue. —	499
Bore-tree. —	1131
Bour-tree. —	1131
Brachens. II. —	657
Brachens, royal. II. —	653
Brakes. II. —	657
Bramble. —	264, 265
Briar-Rose. —	262
Briar-sweet. —	262
Brome-grafs. —	104
Brooklime. —	73, 74
Broom. —	383
Broom-rape. —	332
Bryony, white. II. —	590
Bryum. II. —	716, 738, and 1110
Buck-bean or Bogbean. —	137
Buckshorn-plantain. —	118
Buckthorn. II. —	1093
Bugle. —	302
Buglofs, Vipers. —	136
Buglofs. —	135, 136
—— sea. —	134
Bullace-tree. —	254
Bull-rush. —	88
Burdock. —	445
Burgess's Lichen. II. —	827
Bur-marygold. —	461
Burnet. —	119
Burnet-faxifrage. —	169
Bur-reed. —	

ENGLISH and SCOTCH INDEX.

	Page		Page
Bar-reed. II.	— 540	Chara. prickly. II.	— 535
Butter-bur.	— 476, 477	Charlock.	— 360
Butter-cups.	— 292	———— jointed-podded	362
Butter-wort.	— 76	Cherleria, mossy.	— 232
Byssus. II.	— 999, 1007	Cherry-tree.	— 254
		Chervil, wild.	— 167
C.		———— sweet.	— 166
Caltrops, water.	— 122	———— hemlock.	— 166
Cammock.	— 386	Chestnut-tree. II.	— 585
Camomile.	— 493—495	Chichling-vetch.	— 392
Camomile Daifie.	— 489	Chickweed, common.	— 172
Campion.	— 226, 227, 240	———— germander.	— 75
Canary-grafs.	— 90	———— mouse-ear.	— 240
Canterbury-bells.	— 142	———— star-headed.	— 70
Carex. II.	— 542—568	———— blinking.	— 110
Carline Thistle.	— 458, 460	———— plantain-leav'd.	— 230
Carmylie. II.	— 1132	———— sea.	— 230
Carrot.	— 156	———— purple-flower'd.	— 230
Caraways.	— 169	———— vernal mountain.	— 231
Cat-mint.	— 304	———— larch-leav'd.	— 232
Cats-foot.	— 470	———— fine-leav'd. II.	— 1102
Cats-tail. II.	— 538	———— winter-green.	— 194
Cats-tail Grafs.	— 91	Chitterling, sea.	— 968
Catchfly.	239, and II. 1101	Chives.	— 180
Celandine, greater.	— 278	Cicely, wild.	— 167
———— lesser.	— 289	Cinquefoil, common.	— 272
Celery.	— 170	———— tormentil.	— 270
Centaury.	— 152	———— purple marsh.	— 276
———— perfoliate	— 200	———— vernal.	— 270
Champignon. II.	1017, 1021	Cistus, dwarf.	— 281
Chanterelle. II.	— 1008	Cives.	— 180
Chara, common. II.	— 535	Clary, wild.	— 79
———— pliant. II.	— 536	Clavaria. II.	— 1056—1062
		Cleavers.	

ENGLISH and SCOTCH INDEX.

	Page		Page
Cleavers. —	117	Crosswort. II. —	633
Cloud-berry. —	266	Crowfoot. —	290—295
Clover. — —	404—406	Crow-filk. II. —	976
Clown's All-heal. —	313	Crowberries. II. —	612
Cockle. —	239	Cuckow Flower. —	239, and 349
Cock's-comb. —	322	Cuckow Pint. —	529
Cock's-foot Grafs. —	99	Cudweed. 470—473, 501, and 502	
Codlings and Cream. —	198	Currants. —	146
Colewort, sea. —	364	Cyperus, bastard. —	89, II. 559
Coltsfoot. —	475	Cyperus-grafs, millet. —	89
Columbines. —	284		
Comfrey. 134. and II. 1092		D	
Conferva. II. —	976—998	Daisie. — —	487—489
Cork. II. —	818	Dandelion. —	432, 433
Corn-fallet. —	85	Danewort. —	171
Cotton-grafs. —	89	Darnel-grafs. —	107
Cows Lungwort. —	143	Deer's Hair. II. —	1080
Cow-quakes. —	99	Devil's-bit. —	114
Cow-weed. —	167	— yellow —	433
Cow-Parfnep. —	158	Dew-berry. —	264
Cow-wheat. —	324	Dier's weed. —	248, 384
Cowslips. —	136	Dils. II. —	933
Crab-tree. —	258	Dittander. —	339, 340
Crake-berries. II. —	612	Dock. —	188—190
Cranberries. —	203	Dodder. II. —	1090
Cranesbill. 366—372, and II. 1106		Dogs-grafs. —	109
Cress, bitter. —	350	Dogs-tail-grafs. —	100
— penny. —	340	Dropwort. —	259
— rock. —	346	— Hemlock. —	162
— swine's —	345	— water. —	161
— water. —	351	Dryas. —	275
— wild. —	340	Ducks-meat. II. —	537
— winter. —	355	Dulish. II. —	933
		Dulse. —	

ENGLISH and SCOTCH INDEX.

	Page		Page
Dulse. II. — — —	933	Fool-stones. — — —	514, 515
Dulse, pepper. II. — — —	953	Foxglove. — — —	331
Dulse, mountain. II. — — —	973	Fox-tail-grass. — — —	91
Dutch Myrtle. II. — — —	613	Frog-bit. II. — — —	622
Dutch Rushes. II. — — —	650	Frogs-lettuce. — — —	122
E.		Fucus. II. — — —	902, 964
Earth Nuts: — — —	105, 156	Fumitory. — — —	379, 380
Egg Agaric. II. — — —	1022	Furze. — — —	385
Elder, common. — — —	171	— needle. — — —	384
— dwarf. — — —	171	G.	
— water. — — —	170	Gale. II. — — —	613
Elecampane. — — —	484	Garlick. — — —	179
Eller. II. — — —	576	Gaul. II. — — —	613
Elm. — — —	151	Gentian. — — —	152
Enchanter's Nightshade. — — —	80	Germander, wild. — — —	75
Eryngo. — — —	153	Germander Speedwell. — — —	75
Eyebright. — — —	323, 324	Gillyflower, sea. — — —	173
— yellow marsh. — — —	322	Girdle and Hangers. II. — — —	936
F.		Gladiole, water. — — —	211, 505
Fairy Agaric. II. — — —	1021	Glasswort. — — —	69
Fellwort. — — —	152	— white. — — —	150
Fern. II. — 653, 655, 657, 671		— prickly. — — —	151
Fescue-grass. — — —	101	Globe-flower. — — —	296
Feverfew. — — —	490—493	Goats-beard. — — —	426
Figwort. — — —	329	Goldilocks. — — —	290
Fir, Scotch. II. — — —	588	Gold of Pleasure. — — —	36
Flax. — — —	174	Golden-rod. — — —	483
Fleabane, blue. — — —	474	Gools. — — —	489
Flixweed. — — —	354	Goose-foot. — — —	148
Flower-de-luce. — — —	86	Goose-grass. — — —	117
Fools-parsley. — — —	165	Goose-tongue. — — —	496
		Gorse. — — —	385
		Goule.	

ENGLISH and SCOTCH INDEX.

	Page
Goule. II. — — —	613
Gout-weed. — — —	170
Gouke-meat. — — —	238
Gowan. — — —	487
Gowans, yellow. — — —	489
Grass, arrow-headed. — — —	192
— bent. 93. and II. 1082	
— brome. 104, and II. 1086,	1087
— reed-canary. — — —	90
— cat's-tail. 91, and II. 1080	
— cock's-foot. — — —	99
— cotton. — — —	89
— couch. — — —	109
— darnel. — — —	107
— dog's. — — —	109
— dog's-tail. — — —	100
— fescue. 101, and II. 1085	
— five-leav'd. — — —	272
— fox-tail. — — —	91
— hard. II. — — —	632
— hair. — — —	94
— knot. — — —	208
— lyme. — — —	108
— meadow. — — —	96, 98
— melic. — — —	96
— mat. — — —	90
— millet. — — —	92
— oat. — — —	105
— of Parnassus. — — —	172
— quaking. — — —	99
— reed. 106. and II. 1083	
— soft. II. — — —	631

	Page
Grass, scurvy. — — —	343
— spiked sea. — — —	192
— vernal. — — —	81
— wheat. — — —	109
— wrack. — — —	530
Graymill. — — —	132
Gromill. — — —	132
Gromwell. — — —	132
Ground-ivy. — — —	307
Groundsel. — — —	478—480
Guills. — — —	489
Gules. — — —	489
Gut Laver. II. — — —	968
H.	
Hair-grass. — — —	94
Hag-berries. — — —	253
Hag-taper. — — —	143
Hare-bells. — — —	183
Hares-tail Rush. — — —	90
Harts-tongue. II. — — —	660
Hazel-nut-tree. II. — — —	586
Hather. — — —	203, 204
Hawk-weed. — — —	434—443
Hawthorn. — — —	256
Hazleraw. II. — — —	831
Heart's-ease. — — —	510
Heath. — — —	203, 205
— black-berried. II. — — —	612
Hellebore. — — —	297
Helleborine. — — —	526, 528
Helvella. II. — — —	1047
Hemlock. — — —	157
Hemlock,	

ENGLISH and SCOTCH INDEX.

	Page
Hemlock, long-leav'd water.	164
—— Chervil.	166
—— water.	163
—— leffer.	165
Henbane.	144
Henbit, great.	309
—— small.	76
Hep-tree.	262
Herb-Gerard.	170
—— Bennet.	273
—— Paris.	209
—— Robert.	369
Holly, sea.	153
Holly-tree.	121
Hollin. II.	1131
Honeyfuckle.	143
—— dwarf.	119
Hops. II.	615
Hop Trefoil.	409
Horehound, stinking.	314
—— white.	315
—— water.	79
Horn-beam. II.	585
Horfe-beech. II.	585
Horfe-knot.	498
Horsetail. II.	646—650
Horsetail, stinking water. II.	535
Houseleek.	251
Hounds-tongue.	133
Hyacinth.	183
—— vernal star.	181
Hydnum. II.	1041
Hypnum. II.	739, 766, and 1111

	Page
Hypopithys.	214
I.	
Jack-by-the-hedge.	356
Jews-ears. II.	1054
Ironwort, petty.	314
Jungermannia. II.	769—791
Juniper. II.	623
John's Wort.	416—420
Ivy.	146
Ivy-leav'd Speedwell.	76
K.	
Kidney-wort.	234
—— hairy.	221
Kidney-vetch.	387
Knapweed.	498, 500
Knawel.	225
Knot-berries.	266
Knot-grass.	208
—— German.	225
Knot-berries.	266
L.	
Ladies-bedstraw.	115, 116
—— finger.	387
—— mantle.	120
—— smock.	347, 349, and II. 1105
Laver. II.	967, 976
Laver, mountain. II.	973
Laurel, spurge.	205
Leopard's-bane.	485
Lettuce,	

ENGLISH and SCOTCH INDEX.

	Page		Page
Lettuce, wild. —	430	Maidenhair. II.	662—666
— strong-scented.	430	— golden. II.	698
— ivy-leav'd. —	431	— true. II.	679
— wall. —	431	Mallow. —	375, 376
— frog's. —	122	— marsh.	373
Lichen. II. —	800, 897	— tree.	374
Lilly of the Valley.	182	Maple. II.	640
— May. —	182	— great. II.	639
— water. —	282, 283	Marjoram, wild.	317
Lime-tree. —	281	Marchantia. II.	793, 797
Linden-tree. —	281	Mares-tail.	70
Ling. —	203	Marygold, corn.	489
Liquorice, wild. —	400	— marsh.	298
Livelong. —	234	Masterwort.	168
Liverwort. II. —	845, 847	Matfellow.	500
Lobelia, water. —	505	Mat-grafs.	90
Loch-reed. II. —	1131	May-weed.	495
Loofestribe, spiked.	247	Meadow-grafs.	96
— yellow —	138	Meadowsweet.	260
Lovage, Scotch. —	159	Meadow Saffron.	192
Loufewort. —	327	— Rue.	285
Lucken-gowan. —	296	Melilot.	402
Lungwort, cows. —	143	Melic-grafs.	96
— French. —	437	Mercury, English.	147
Lungwort Lichen II.	831	— Dogs. II.	620
Lyme-grafs, —	108	— annual. II.	621
M.		Meu. —	157
Madder, great bastard. —	116	Milfoil. —	496
— crosswort. —	116	— spiked water. II.	581
— little field.	114	— hooded. —	77
— northern.	116	Milkwort. —	381
Madwort, German.	135	— sea. —	147
		— purple mountain.	400
		Millet-	

ENGLISH and SCOTCH INDEX.

	Page		Page
Millet-grass.	92	Mustard, white.	361
Mint.	305, 306, 1104	— wild.	360
Mnium. II.	705, 715	Myrtle, Dutch. II.	613
Moneywort.	138	Myrrhe.	166
Moneywort, purple.	139		
Moonwort. II.	652	N.	
Moor-berries.	203	Navew.	359
Moor-grass.	268	Navelwort.	234
Morel. II.	1043, 1044	Needle, shepherd's.	166
Moschatel.	209	Nettle, common. II.	578
Moss-berries.	203	— dead.	308
Moss-bog. II.	691	— hemp.	310
— cup. II.	869	— hedge.	312
— crops. II.	1080	Net-work. II.	569
— club. II.	685—690	Nightshade, woody.	145
— water. II.	694	— garden.	145
Mother-of-Thyme.	318	— deadly.	144
Motherwort.	316	— enchanters.	80
Mucor. II.	1071—1073	Nipplewort.	444
Mould. II.	1072	Nosebleed.	496
Mouse-ear, coddled.	358	Nut, earth.	156
— chickweed.	240	Nut-tree. II.	586
— scorpion-grass.	132		
Mousetail.	176	O.	
Mugwort.	468	Oak. II.	581
Mugweed. II.	633	Oat-grass.	105
Mullein.	143	Ophrys, coral-rooted.	523
Mushroom. II.	1017	— bird's nest.	522
Mustard, common.	362	— marsh.	525
— hedge.	354	Orach. II.	636, 638
— mithridate.	341	Orpine.	234
— tower.	358	Orchis.	512, 518
— treacle.	340	Osier. II.	608
		Osmund	

ENGLISH and SCOTCH INDEX.

	Page
Osmund, royal. II.	653
Ox-eye. ———	488
Ox-slips. ———	136
Oyster-green. II. ———	970
P.	
Paddock-pipe. II. ———	648
———— stool. II.	1008
Pansies. ———	510
Park-leaves. ———	415
Parsley, corn. ———	155
———— fools. ———	165
———— hedge. ———	155
———— knotted. ———	154
———— piert. ———	121
———— Scotch. ———	159
Parsnep, cow. ———	158
———— water. 160, 161. & II.	1095
Pearlwort. ———	125
Pease, heath. ———	389
———— everlasting. ———	392
Pellitory, wall. II. ———	634
Penny-royal. ———	307
Pennywort, marsh. ———	154
———— wall. ———	234
Pepper-Dulse. II. ———	953
———— grafs. II. ———	682
———— wall. ———	235
———— water. ———	208
———— wort. ———	339
Periwinkle. ———	147
Peter's Wort. ———	416, 420

	Page
Peziza, II. ———	1048—1055
Phascum. II. ———	693
Pig-nut. ———	156
Pilewort. ———	289
Pimpernel, bastard. ———	119
———— common. ———	139
———— creeping. ———	139
———— round-leav'd water. ———	142
———— yellow. ———	138
Pink. ———	225, 226
———— meadow. ———	239
Pine, wild. II. ———	588
Planetree. II. ———	639
Plantain. ———	117
———— bastard. ———	332
———— grafs-leav'd. II. ———	571
———— water. ———	193
Plowman's Spikenard. ———	473
Poa-grafs. 96. & II. ———	1083, 1084
Polypody. II. ———	667—678
Polytrichum. II. ———	698—704
Pondweed. ———	121—124
———— horned. II. ———	534, & 580
Poplar. II. ———	616—618
Poppy. ———	279
———— yellow horned. ———	279
Prickwood. ———	145
Primrose. ———	136
Privet. ———	72
Privy-Saugh. II. ———	1131
Puff-balls. II. ———	1064—1070
Purging-thorn. II. ———	1093

ENGLISH and SCOTCH INDEX.

	Page		Page
Purslane, water.	187	Rosemary, marsh.	214
— sea. II.	635	Royal Brachens. II.	653
		Rue, wall. II.	665
		— meadow.	285
Quick.	256	Ruppia, sea.	124
Quicken. II.	1131	Rupture-wort, leaf.	174
Quicken-tree.	256	Rush. 183—187. & II.	1100
Quill-wort. II.	683	— bog	86, 87
		— bull.	88
		— club.	87, 88
		— flowering.	211
		— Hare's-tail.	90
		Rushes, Dutch. II.	650
		S.	
Radish, water.	352	Sage, wood.	303
Ragged Robbins.	239	Saffron, meadow.	192
Ragwort.	480, 481	St. John's Wort.	416—420
Ramsons.	179	St. Peter's Wort.	416, 420
Raspberry.	263	Sallow. II.	607
Rattle, yellow.	322	Saltwort.	69
Reed-grass.	106	— black.	147
Reed-mace. II.	539	Sampire.	158
Rest-harrow.	386	— golden. II.	1107
Rhendeer Lichen. II.	877	— marsh.	69
Ribwort, plantain.	118	Sanicle.	154
Riccia. II.	799	Satyrion.	519
Roan-tree.	256	Sauce-alone.	356
Rocket, base.	249	Saugh II.	607
— amphibious.	352	— Privy. II.	1131
— sea.	363	Saw-wort.	447
— Isle of Man.	353	— alpine.	448
— water.	351	Saxifrage, burnet.	169
— winter.	355		
Roebuck-berries.	265		
Rosebay Willow herb.	197		
Rosewort. II.	619		
Rose.	261, 262		

ENGLISH and SCOTCH INDEX.

	Page
Saxifrage, golden. —	219, 220
———— alpine. —	221
———— starry. —	221
———— heath-like. —	222
———— autumnal. —	222
———— white. —	224
———— moss. —	225
Scabious. —	114
———— rampion. —	504
———— sheeps. —	504
Scorpion-grafs, —	132
Scotch Scurvy-grafs. —	140
Scull-cap. —	320
Scurvy-grafs, —	343, 344
———— Scotch. —	140
Sea-beard. II. —	994
Sea-ware. II, —	904
Sags. II, —	1078
Self-heal. —	321
Septfoil. —	272
Shepherd's Needle. —	166
———— Purse. —	342
———— Rod. —	113
Sibbaldia. —	175
Silverweed. —	268
Sifon, verticillate. II. —	1096
Slae. —	255
Slake. II. —	967
Sloe-tree. —	255
Sloke. II. —	967
———— green. II. —	970
Smallage. —	170
Snakeweed. —	206

	Page
Sneezewort. —	496
Solomon's Seal. —	182
Sorrel. —	190, 191
———— wood. —	238
Sowruck. II. —	1131
———— sheeps. II. —	1131
Sow-thistle. —	427, 428
———— bane. —	148
Spear-wort. —	287—289
Speedwell. —	72—76
Spignel. —	157
Spikenard, Plowman's. —	473
Spinage, wild. —	147
Spindle-tree. —	145
Splachnum. II. —	696, 697
Sphæria, knobbed. II. —	1114
Spleenwort. II. —	661
———— rough. II. —	654
———— polypody. II. —	669
Spret. II. —	1131
Spurge. —	249, 250
Spurge-laurel. —	205
Spurrey. —	231, 243, 244
Squinancy-berries. —	146
Staneraw. II. —	816
Star of Bethlehem. —	180
Starwort, sea. —	482
Steep-grafs. II. —	1131
Stichwort. —	228, 229
———— upright. —	125
Stinkhorns. II. —	1044
Stinking-weed. II. —	1132
Stonecrop. —	234—236

ENGLISH and SCOTCH INDEX.

	Page		Page
Stool-bent. II.	— 1131	Trefoil.	— 403—412
Strawberry.	— 267	— bird's foot.	— 403. 411
Sun-dew.	— 175	— marsh.	— 137
Sun-spurge.	— 250	— melilot.	— 412
Sun-flower, little.	— 281	Tremella. II.	— 898—901
Swines Ar-nuts.	— 105	Trichomanes. II.	— 681
— Swines Cresses.	— 345	True-love.	— 209
— Succory.	— 442	Truffles. II.	— 1064
Sycomore, bastard. II.	— 639	Turkey-feather. II.	— 967
T.		Tutsan.	— 415
Tansey, common.	— 465	Tway-blade.	— 524
— wild.	— 268	V.	
Tare.	— 395—398	Valerian.	— 85
— everlasting.	— 391	Venus's Comb.	— 166
Targionia. II.	— 792	Vernal-grass.	— 81
Teasel.	— 113	Vervain.	— 78
Thale's Cress.	— 358	Vetch.	— 393—397
Thistle.	— 448—460	— wood or bitter.	— 390
Thongs, sea. II.	— 920	— Targionia. II.	— 792
Thorn, black.	— 255	Vetchling.	— 391
— buck. II.	— 1093	Violet.	506—509. & II. 1109
— white.	— 256	Viper's-bugloss.	— 136
Thrift.	— 173	W.	
Throatwort.	— 141, 142	Wake-robin.	— 529
Thyme.	— 318	Wall-flower.	— 357
Timothy-grass.	— 91	— rue. II.	— 665
Toadflax.	— 328	Ware, sea. II.	— 904
Toothwort.	— 326	Wart-spurge.	— 250
Touchwood Boletus. II.	— 1034	Way-faring tree.	— 170
Tower-mustard.	— 358	Wheat-grass.	— 109
Tormentil.	— 272	Whins.	— 385
— Cinquefoil.	— 270	Whins,	

ENGLISH and SCOTCH INDEX.

	Page		Page
Whins, petty. ———	384	Winter-green. ———	194, 218
White-rot. ———	154	Woad, wild. ———	248
Whistles, sea. II. ———	919	Wolf's-bane. ———	485
Whitlow-grafs. ———	338	Woodbine. ———	143
——— rue-leav'd ———	224	Woodruff. ———	115
Whortle-berries. — 201, 202		Wood-waxen. ———	384
——— bear's. ———	216	Wormseed, treacle. ———	357
Wilding. ———	258	Wormwood. ———	466, 467
Wild Williams. ———	239	Wrack, grafs. ———	530
Williams, wild. ———	239	——— sea. II. ———	902, 904
Willow. II. ———	595—609	Wych-Elm. ———	152
Willow-herb. ———	198, 199		
——— hooded. ———	320		
——— purple-spiked ———	247		
——— rose-bay. ———	197		
——— sweet. II. ———	613		
——— yellow. ———	138		

Y.

Yarrow. ———	496
Yellow-weed. ———	248
Yew-tree. II. ———	626

ERSE

ERSE INDEX

OF THE

NAMES of PLANTS.

A.		B.	
	Page		Page
A BHAL-fiadhaich. -	258	Baoileaga. II. —	1131
Achlasan-challum chille.	416	Bàr-a'-bhrisgein, —	268
A' chorra-shod. —	298	Bàr-a'-mhilsein. —	411
Am bearnan-brìde. —	432	Bàr-braonan-nan-con. —	272
Am beatha. II. —	572	Bàr-dearg. - 173. II.	1098
Am bliocan. —	181	Bealaidh. —	383
Am breinein-brothach. —	488	Bearnan-brìde. —	432
Am fearna. II. —	576	Beatha. II. —	572
A' mharag. —	362	Beeora Leacra. II. —	1132
Am fuath-muc. —	183	Biadh-eunain. —	238
An Calltain. II. —	586	Biolaire. —	343
An cuil-fhionn. —	121	Bliocan. —	181
An darach. II. —	582	Bonaid-an-losgainn. II. —	1039
An Giuthas. II. —	588	Braoileaga-nan-con. —	216
An-leamhan. —	151	Braonan-backuill, —	156
An-t' aiteal. II. —	623	Breinein-brothach, —	488
An-t' iudhar. II. —	626	Brogan-na-cu'aig. —	76
An tri-bhileach. —	138	Bualan. — 478. II.	1132
		C. Cainchean.	

ERSE INDEX.

C.		Page		Page
Cainchean. II.	—	1080	Dearca roide,	— 201
Cairteal.	—	305	Deilgneach,	— 450
Calltain. II.	—	586	Dìthean.	— 489
Caol-miòsachan,	—	174	Droighionn, preas-nan-airneag.	255
Caora-bada miann,	—	265	Droman. II.	— 1098
Cen-cerig. II,	—	818	Druman.	— 171. II. 1098
Cen-dù, II.	—	818	Duilleag-bhait,'	— 283
Chaithir-thalmhain.	—	496	Duilliosg. II.	— 933
Chluas-liath,	—	475	Duilliosg-nam-beann. II.	— 973
Chorra-shod.	—	298	E.	
Cip-chaan-du'. II.	—	1080	Earbull eich. II,	647, 649
Cluaran.	— 449. II.	1132	Earr'-thalmhain,	— 496
Cluas-an-fheìdh.	—	457	Eidhionn-na-craige.	— 146
Cno-chomhlaich. II.	—	587	F.	
Copagach.	—	188	Feada coille.	— 238
Copan-an-driuc.	—	120	Feamainn. II.	— 904
Corcar. II.	—	812	Feantag. II.	— 578
Corr, Cor-meille.	—	389	Fearna. II.	— 576
Cota-preasach-njon-an-Ri.	—	120	Fhearr-dhris.	— 262
Craobh-chaorain,	—	256	Fiantaga. II.	— 612
Creamh. II.	—	1131	Foghenan.	— 449. II. 1132
Criothann. II.	—	617	Fraoch,	— 204
Crotal. II.	—	818	Fraoch-badain. II.	— 1131
Cruai'-lus.	—	496	Fuath-muc.	— 183. II. 1099
Cuach-Phadruic.	—	117	G.	
Cuil-fhionn.	—	121	Gallan gainbhich.	— 475
Curachd-na-cu'aig.	—	141	Gallan mòr.	— 477
Curan. II.	—	1095	Garbhag-an-t-fleibh.	— 687
D.			Ghlais-leun.	— 288
Darach. II.	—	582	Gille-guirmein.	— 114
Deantag. II.	—	578	Giuthas. II.	— 588
Dearca. II.	—	1131	I.	
Dearca-fithich. II.	—	612	Iadh-shlait.	— 143
			Iudhar. II.	— 626

L. Leamhan.

E R S E I N D E X.

	Page		Page
L.		Pund-glaifs. — — 96	
Leamhan. — — —	151	R.	
Liath-lus. — — —	469	Rabhagach. — —	283
Liòn. — — —	174	Raineach. II. — —	657, 671
Lochan-nan-dav. II. — —	1131	Rein-an-ruifg. — —	323
Lui'-nan-tri-beann. — —	138	Roid. II. — —	613
Lus-a-chraois. — — —	119	Rù. — — —	116
Lus-a'-chrubain. — — —	153	Ruitega. — — —	265
Lus-chneas-Chuchullainn. — —	260	S.	
Lus-chosgadh-na fola. — —	496	Sail-chuach. — —	507
Lus-glen-Bracadale. II. — —	621	Sealbhag. — — —	191
Lus-mhic-ri-Breatuinn. — —	318	Sealbhag-nam-fiadh. — —	190
Lus-mòr. — — —	288	Seamar. — — —	404
Lus-na-fearnaich. — — —	175	Seamrag. — — —	404
Lus-nam-braoileag. — — —	202	Seileach. II. — —	607, 609
Lus-nan-dearc. — — —	201	Seilifdeir. — — —	86
Lus-nan-eighreag. — — —	266	Sgeallan. — — —	362
Lus-nan-laogh. II. — —	619	Sgitheach. — — —	256
M.		Shunis. — — —	159
Mac-an-dogha. — — —	445	Siunas. — — —	159
Meannt. — — —	305	Slàn-lus. — —	118. II. 1089
Meuran-fith. — — —	331	Sograch. — — —	136
Mòan. II. — — —	1131	Sporran-buachaill. — —	342
Muilcionn. — — —	157	Subh-làir. — — —	267
Mùileag. — — —	203	Subh-thalmhainn. — —	267
Muran. — — —	107	Suircean fuirich. — —	445
N.		T.	
Noinein. — — —	487	Teanga-mhinn — — —	308
P.		Tònag-a-chladaich. II. — —	1098
Peafair-luch na coille. — —	394	Tri-bhileach. — — —	138
Plinntrinn. II. — — —	639	U.	
Preas-nam-Fiantag. II. — —	612	Uinfionn. II. — — —	641
Preas-nan-airneag. — — —	255	Urach-bhallach. — — —	517
Preas-subh-craoibh. — — —	263		

XXXXX

(2 Bde) I. 91

Lightfoot, John

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